WOOD WORKING Digest

FEBRUARY 1955

In This Issue . . .

Washington News

Finishing Stories

Keys to Carbide Economy

Report on the Chicago Market

Complete index, page 5

Acceptance under Section 34.64, P.L.&R., authorized

WOOD WORKING DIGEST

222 E. Willow Ave. Wheaton, Ill.

Form 3547 Requested Return Postage Guaranteed

FEB 15 1955 ST. LOUIS LIBRARY

ST LOUIS PUB LBRY
CATALOGUE & ORDER DEPT
OLIVE 13TH & 14TH STS
ST LOUIS 3 MO

DRIVE STANDARD IC
ROUN

NEW PORTABLE AIR DRIVE SPOTNAILERS AND

MATICALLY!

ine dependable, production-tested Spotpinner auto-
matically drives—and countersinks
familiar round 12 gauge
millwork

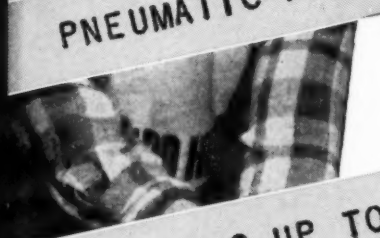
SPOTPINNERS EMPLOY NEW HIGH VELOCITY

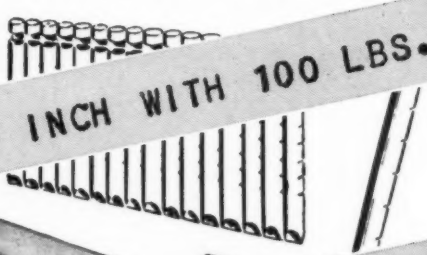
The new Spotpinner has a double capacity magazine contained entirely within its virtually indestructible molded frame.

Spotpi

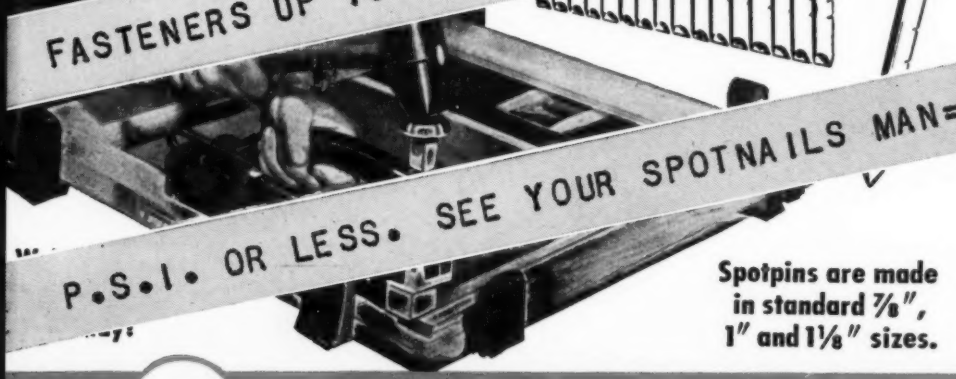
PNEUMATIC PRINCIPLE• DRIVE ALL SPOTNAILS

—chiselpointed
cneck rails and muntins.
Spotpins are round, straight (no offset) and
cohered in sticks for quick magazine loading.





FASTENERS UP TO 1-1/4 INCH WITH 100 LBS•



P•S•I• OR LESS• SEE YOUR SPOTNAILS MAN=

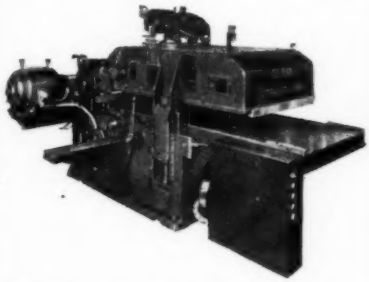
Spotpins are made in standard ⅞", 1" and 1⅛" sizes.

SPOTNAILS, INC. EVANSTON 1, ILL.

"OLIVER" No. 166 MOTOR-ON-HEAD JOINTER

Unmatched for truing up lumber and cutting perfect glue joints

This "Oliver" has a heavy, strongly ribbed bed and sturdy cabinet columns to eliminate vibration. Work slides easily over the long, polished tables. The circular cylinder is fitted with three high-speed knives—four, if desired. Fence can be set to any angle from square to 45°. Rabbeting attachment also furnished. The No. 166 is made in four sizes: to take stock up to 30" wide, cuts up to ¾" deep. Write for Bulletin No. 166.



The "Oliver" line includes the Straitoplane which in one operation takes stock out-of-wind, and planes both sides smooth to required dimension. Also the well known power-feed Facing Planer and several Single Surfacers. The heavy-type Jointers are made from 6" to 30" sizes. Write for Bulletins.

OLIVER

OLIVER MACHINERY COMPANY • GRAND RAPIDS 2, MICH.

THE SMITH

ENDLESS BED SANDER

WITH SELF-OSCILLATING DRUMS AND VARIABLE SPEED DRIVE, 12' TO 35' PER MINUTE

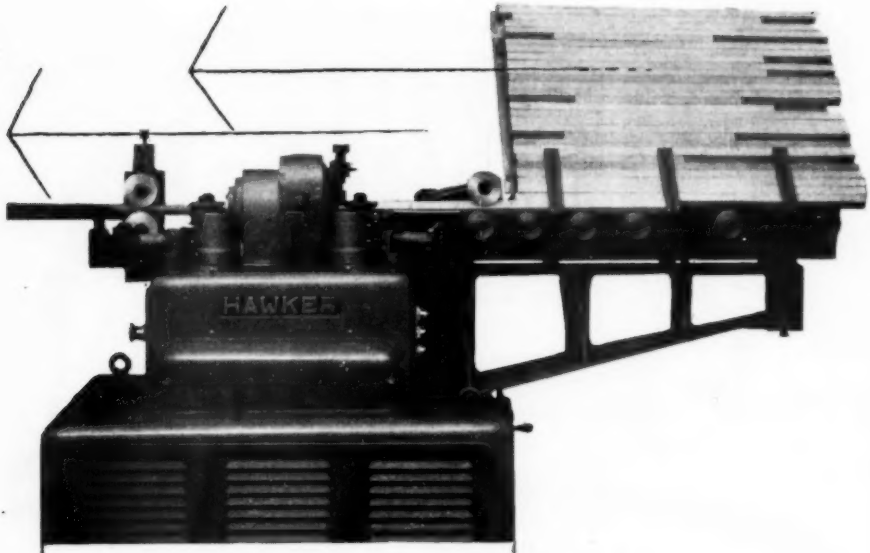
The self-oscillating mechanism (Patented) is the greatest improvement in drum sander construction in many years. Eliminates the multi-jointed, old style oscillator, with its bulky cover and separate motor drive. Operator now can get close to the machine for changing paper, making change in less than five minutes.

AND YOU CAN ARRANGE FOR A 5 YEAR LEASE, TOO!

Write today for descriptive literature

H. B. SMITH MACHINE CO.

SMITHVILLE, NEW JERSEY



world's fastest dowel machine

now world's easiest!

Now—one man can easily keep the machine—the Hawker rod and dowel machine, the world's fastest—running at capacity, all day long. A number of installations are proving this every day.

The new semi-automatic feeder (operator merely fills rack with rough stock as needed) makes possible even more profitable use of this machine. And it rounds out these standard features:

Minimum of vibration and chatter, no splintering—self-centering stock guide holds stock to within ½" of cutters.

No twisting or spinning of dowel—vertically mounted secondary outfeed rolls prevent it.

Higher cutting speed, better surface finish—variable speed stock-feed drive lets operator select speed best suited for size and stock.

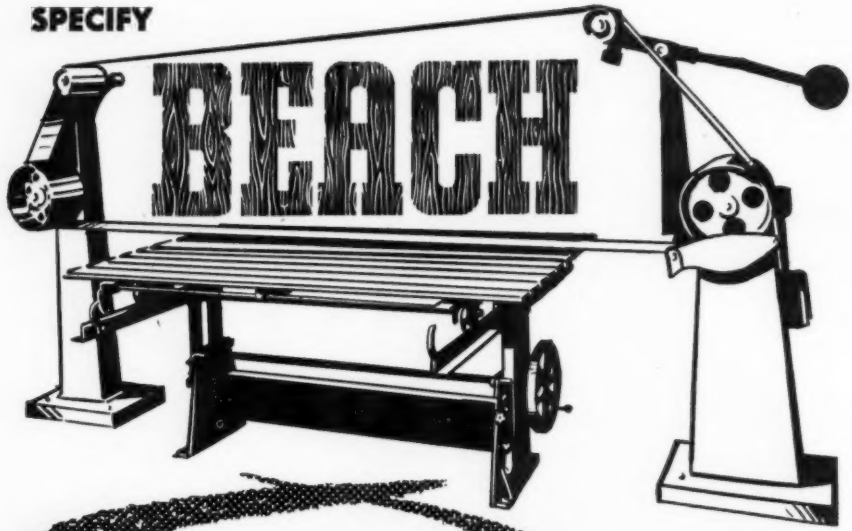
Write for new Hawker manual. The Hawker Manufacturing Co., 1449 Keowee Street, Dayton 4, Ohio.

PRODUCTION MACHINES FOR WOOD: DOWEL, CHUCKING, SPECIAL

HAWKER

SPECIFY

BEACH



HAND BLOCK BELT SANDER

Designed and built to give uninterrupted, trouble-free service, this versatile machine solves a variety of finishing operations – for sanding and finishing wood products; and for products made from aluminum, brass, bronze, stainless steel and plastics. Sturdily built, 42″ x 80″ table mounted on anti-friction rollers; standard 2 HP, 2 or 3 phase ball-bearing motor.

The Beach Hand Block Belt Sander is already in use by over 1000 leading industrial firms! You will be amazed at the economical, efficient operation . . . the initial low cost!

Only $595. F.O.B. factory.

DOUBLE CUT-OFF SAW

TILTING TABLE SAW

SHAPER

BEACH

MANUFACTURING CO.
MONTROSE, PA.

Write today-

for full details on Beach Hand Block Belt Sanders and the complete line of Beach woodworking machinery.

WOOD WORKING Digest

FEBRUARY, 1955
Vol. 57, No. 2

SPECIAL FEATURES

Award of Merit Contest 44
Letters to the Editor 46
Keys to Carbide Economy 51
The Chicago Market 75
Evolution of Lumber Drying Techniques 87
Polyvinyl Acetate Glues 99

FINISHING SECTION

Wood Furniture Finishing 111

SAFETY SECTION

How Fire-Proof is Your Factory? 131

Veneer & Plywood Section

Plywood is Better 145
No One Rash Enough 155
Extra Light Laminates 161

DEPARTMENTS

The Editor's Page 31
Pointed Paragraphs 32
Comments from the Nation's Capital 37
Wood Working Panel 165
Equipment and Supplies 171
Help Yourself 179
New Literature 180
Mechanics Through the Ages 188
The Market Place 190
America's Leading Woodworking Dealers 202
Products Index 204
Index to Advertisers 206

E. McDaniel
Editor

WM. F. SCHLEICHER
Associate Editor

THOMAS D. PERRY
Contributing Editor

R. C. VAN KAMPEN
President

VINCENT C. HOGREN
Vice-President

J. E. HITCHCOCK
Vice-President

M. L. YONTS
Secretary and Production Manager

District Managers
Are Listed on page 128.

PUBLISHED MONTHLY

MEMBER
BPA

Copyright 1955, by Hitchcock Publishing Co., 222 E. Willow Ave., Wheaton, Ill. Phone WHeaton 8-3400. Cable Address HITCHPUB.

Acceptance under Section 34,64, P. L. & R., authorized Pontiac, Illinois.

"The memory of quality remains long after price is forgotten"

HERE'S TIME-PROVED
"LIFE ASSURANCE" FOR YOUR PRODUCTS

Pride in product is the common denominator of the hundreds of manufacturers who use Woodlife—and *only* Woodlife—to give their products basic protection against . . . . . *Moisture and water absorption, decay, swelling, shrinking, warping, checking, grain raising and termites.*

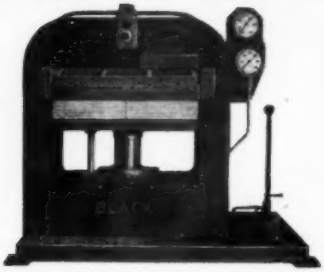
These mamufacturers know that Woodlife quality is underwritten by over 30 years of continuing research in the most active chemical and testing laboratories in the water repellency field.

If you have pride in *your* products and don't know about Woodlife—*you should!* Protection Products engineers will be glad to work with you to develop the most economical Woodlife treatment method for your specific application. Send for the informative folder, "WOOD PRESERVATION WITH WOODLIFE".

WRITE

Protection Products
MANUFACTURING COMPANY
Since 1921
Dept. T, Kalamazoo, Michigan

Presses

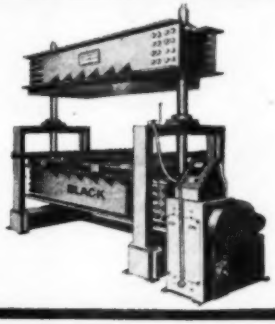


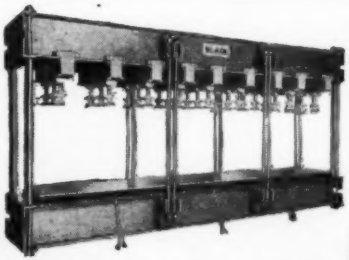
HYDRAULIC PRESSES

Black's hydraulic laminating press is designed for laboratory and experimental work or light production operation. Standard sizes from 1 to 12 or more square feet and pressures up to 100 tons. Now available with heated platens. Variations may be had in size of platens, vertical opening, length of stroke, total pressure applied, heated platens and fast closure arrangements. Write for Bulletin 11-P.

ELECTRIC PRESSES

Black's electric press is fast and efficient on laminating jobs which require moderate pressure, and has proved to be especially popular in the laminating of flush doors and plastic laminates. Here is a high production press at a low initial cost which will give continuous service with an irreducible minimum of maintenance and attention. Write for Bulletin 11-E.





HAND POWERED PRESSES

Black's all steel aircraft model press is stronger and more rigid than conventional presses . . . has wide flange main beams, double corner posts and multiple strain rods. Designed for compact installation requiring no blocking or pit. Offered in a complete range of sizes for every conceivable requirement. Also ten sizes of sectional press units are available. Write for Bulletin 11-G.

"If its gluing equipment—we have it"

write today . . .

THE BLACK BROTHERS CO., INC. 820 9th St., MENDOTA, ILLINOIS

WHO'S WHO among men who know glues*

STEPHEN K. SMITH
Lane Company of Tennessee, Inc.

HARRY C. BERNICCHI
W. W. Kimball Company

STEPHEN K. SMITH
Lane Company of Tennessee, Inc.

HARRY C. BERNICCHI
W. W. Kimball Company

Stephen K. Smith, plant manager of the Lane Company of Tennessee, Inc., knows glues and he knows woods, too—both academically and practically.

He majored in Wood Utilization at New York State College of Forestry, then underwent a course of post graduate work in wood and any other available concealment utilization through Guam, Leyte, Ie Shima and Okinawa, as a U.S. Infantryman! He is still in the Active Reserve!

In March of 1946, he joined the makers of famed Lane Cedar Chests and Lane Tables, where for eight and one-half years he has devoted himself progressively to the perfection of the Lane Company's masterful utilization of wood in their fine products for the home.

Mr. Smith is married—and there's a 7-year old Stephen K. Smith, Jr. who, in view of his father's inherent interest in wood and its uses would naturally have to be nicknamed "Chip"!

Who would think that a glue failure in a single unit in one of those fine pianos for which the W. W. Kimball Company has an international reputation could mar a symphony orchestra's otherwise masterful rendition of a Brahms concerto.

Harry C. Bernicchi, Superintendent of the Mills and Plycor Division of the W. W. Kimball Company, Chicago, has spent 24 years in 14 varied departments of fine piano building. For the past 12 years he has been vitally interested in glues and their performance.

It was the W. W. Kimball Company that first discovered the possibilities of the right type of veneered panels in their "Life Crown Tone Board." Also for laminated pin blocks, another Kimball first—and another opportunity for the development of the right glue for a job on which the tonal triumph of a concert may depend.

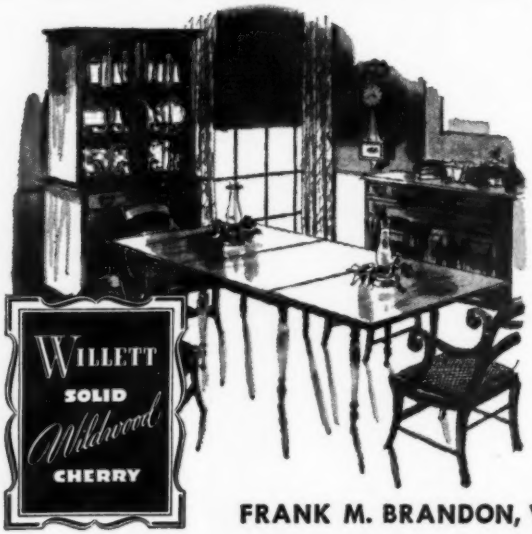
Mr. Bernicchi is married and the father of two daughters.

Do you realize just how many really vital glue jobs there are—from laminating intricate panels for fine musical instruments to giant trusses to support a roof? Is it any wonder that we of National Casein take so seriously this job of delivering the right glue for your job—where you want it, when you want it, and how you want it—tank car, tank truck, drum or bag!

Purpose of our series on "Men Who Know Glues" *is to stimulate our own and your thinking on the subject of glues as well as to remind you that you'll stick with National Casein glues—because they stick for you.*

National Casein *

601 West 80th Street, Chicago 20, Illinois • Broad and Fulton Streets, Riverton, New Jersey



FRANK M. BRANDON, Vice President of

CONSIDER H. WILLETT, INC.

MANUFACTURERS OF *Fine Furniture*

3001 WEST KENTUCKY STREET, LOUISVILLE 11, KENTUCKY

This is the *Standard* kiln referred to by Mr. Brandon. One of the biggest single package kilns, it is 34 ft. wide, 26 ft. deep, and has a door opening 22 ft. high with no pilasters.

Writes: "Some months ago we installed a large capacity STANDARD kiln, of the package type. This kiln holds in the neighborhood of fifty thousand feet of lumber, and dries it in record time. The texture of the lumber taken from this kiln is perfect. It's soft, easily worked, and shows a minimum of shrinkage.

We congratulate you on the excellence of this kiln and assure you that our next kiln will be a STANDARD."

STANDARD DRY KILN COMPANY

P.O. BOX 5708 . . . . . INDIANAPOLIS 21, INDIANA

BRANCH OFFICE: REDMAN ENGINEERING SERVICE • HIGH POINT, N.C.

What isn't in the glue counts, too.

You can't weigh reputation or experience, yet they are shipped with every order of glue you place. When you order adhesives from Rohm & Haas Company, you're ordering not only the dependable products of a major manufacturer, but also the practical experience which accompanies a quarter-century of making synthetic resin adhesives. Because of Rohm & Haas experience, you get smoothly-running gluing operations and, if you wish, first-rate, experienced, technical help with your bonding problems.

UFORMITE

Uformite 400 and Uformite 435—liquid urea-formaldehyde glues for hot and cold bonding. Drum or bulk shipment.

Uformite resins 500, 505, CB-552, and CB-553—powdered urea-formaldehyde resins, catalyzed and uncatalyzed, for hot and cold bonding.

Uformite JS-508—one-component glue for tapeless splicing.

AMBERLITE

Phenolic powder and liquid resorcinol glues for hot pressing and cold bonding.

TEGO RESIN FILM

Phenolic glue in film form for hot pressing fragile and thin veneer.

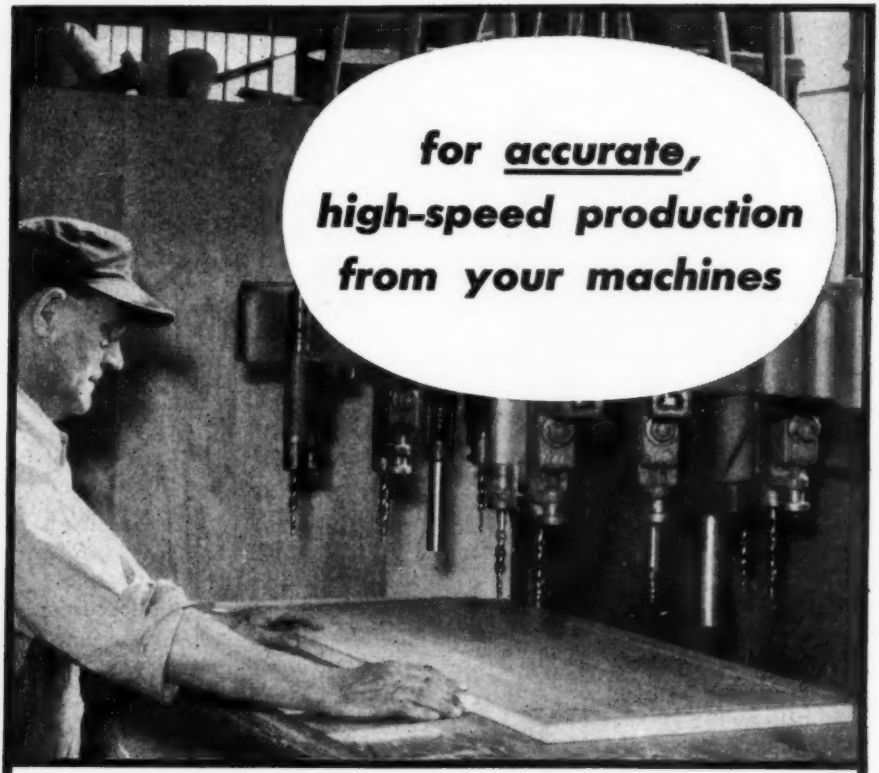
CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

THE RESINOUS PRODUCTS DIVISION

Washington Square, Philadelphia 5, Pa.

UFORMITE *and* AMBERLITE *are trade-marks, Reg. U.S. Pat. Off. and in principal foreign countries.*



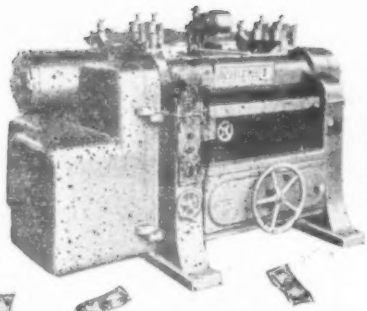
get GREENLEE high-quality boring tools

Produced by the makers of fine woodworking machines, GREENLEE boring tools are designed and built specifically to handle fast work . . . stand up under long, hard usage . . . bore clean. Each tool has accurate sizing, sharp cutting edges, proper heat-treating to bring you high-speed, highly accurate production. Line includes Machine Bits, Machine Drills, Dowel Bits and Drills, Countersink Bits and Drills, Multi-Spur Machine Bits, Expansive Bits, Plug Cutters, Relishing Bits, and others. To get the finest results from your machines "get GREENLEE." Write today for Catalog 34-M with complete data.

GREENLEE

GREENLEE TOOL CO., Division of Greenlee Bros. & Co., 2132 Herbert Ave., Rockford, Ill.

Boring Tools • Hollow Chisels and Bits • Hollow Chisel Sharpeners • And many others • Teco Grooving Tools for Timber Construction • GREENLEE Woodworking Machines include Tenoners • Saws • Mortisers • Borers • Planers • Shapers



WHITNEY 206 SIX-ROLL SINGLE SURFACER

A heavy duty surfacer for highest quality rough and finish planing. New design for easier operation. Rugged construction to maintain accurate production under severe service.

How Soon . . . .

Does an Investment in New Equipment pay off?

The Answer is: It starts paying off immediately! — in more and faster production, better quality work, fewer rejects, less handling, less fatigue and increased productivity of your operators.

New Whitney Machines give you the added insurance of dependable operation and maintained accuracy over the years. Require little attention, assure minimum maintenance and low operational costs. Your investment in Whitney Equipment is an investment in higher plant efficiency, less waste, increased profits.

Why wait to invest in profits. Before you buy, check first to see if Whitney makes it. Let Whitney Machines start "paying off" for you right now. Write, wire or phone us today for latest information.

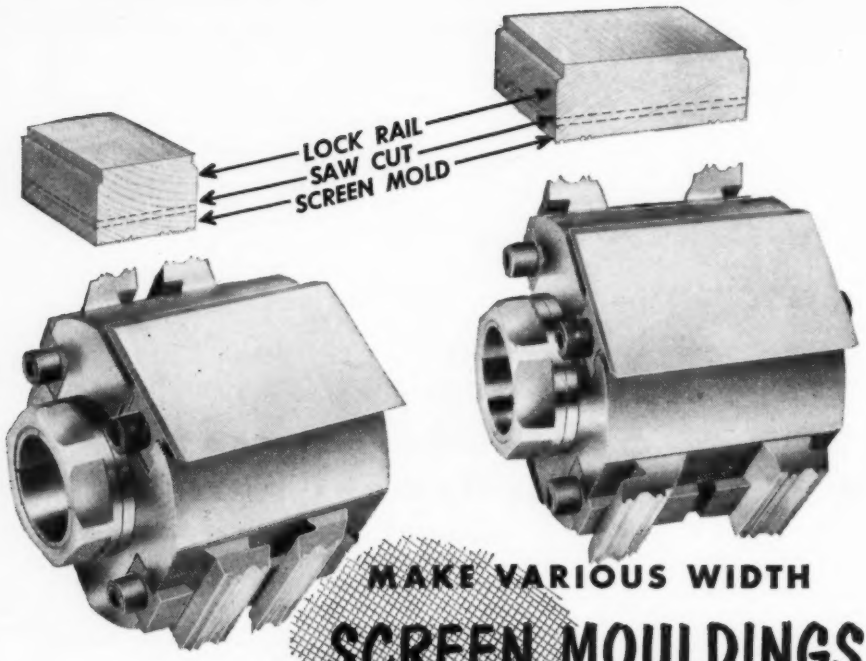
BAXTER D. WHITNEY & SON, INC.
WINCHENDON, MASS.

WHITNEY BUILDS

SINGLE-SURFACERS
DOUBLE SURFACERS
FACING PLANERS
AUTOMATIC SHAPERS
HAND SHAPERS
VARIETY SAWS
BACK KNIFE LATHES

Whitney
FOR FINEST PERFORMANCE

118 YEARS OF EXPERIENCE AND KNOW-HOW



MAKE VARIOUS WIDTH SCREEN MOULDINGS WITH ONE STANDARD BADGER CUTTERHEAD

You get the most for your money when you buy *standard* cutterheads with the built-in *versatility* of the BADGER Clamp "T" Slot Principle. What does this "Clamp "T" Slot Principle" mean to you? It means the same heads can be used for various widths of pattern — the clamps adjust quickly to any width of bit dovetail. It means that you can locate the bits anywhere in the slot to compensate for wear or to make various widths of stock with the same pattern. By using "jointer bits" — bits with straight knife cutting edges — alternating with pattern bits, a surfacing operation can be combined with varying widths of pattern operation. These points are brought out by the example shown.

Look how easy it is to plan your work into natural multiple-runs with Badger heads and Badger engineering! Make the lock-rail along with the screen moulding in one pass through the moulder, plus a resaw operation! Save moulder time, save wood!

If high production with single-purpose tooling is your aim, versatility is not the prime consideration. In this case, individual sets of bits for each size moulding can be furnished for use in a standard Clamp "T" Slot Head.

Another possibility, with the sacrifice of some flexibility, would be the use of a Badger Combination Round and Clamp "T" Slot Head with alternate slots for thin knives instead of jointer bits. This would reduce knife cost.

Versatility is best in a cutterhead when it can go hand-in-hand with *standardization!*

MAKE MORE MOULDINGS

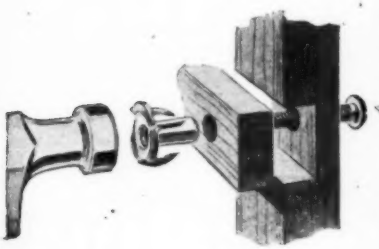
LESS SHAVINGS

WISCONSIN KNIFE WORKS BELOIT, WISCONSIN

Engineers to the Woodworking Industry

New, Improved TEENUT®

FOR FURNITURE and GENERAL WOODWORKING

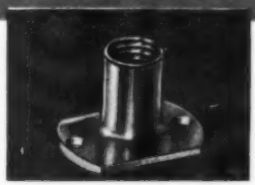


New, barbless prongs are curved, for twisting action as TEENUT is driven, provide increased holding power in wood.

STEEL THREADS IN WOOD

TEENUTS provide positive anchorage for bolts and can be used with or without counter-boring. Ideal for knock-down furniture or wherever fasteners must be concealed, TEENUTS make possible repeated assembly and disassembly without damage to wood. Simply drill hole size of TEENUT barrel and hammer in the TEENUT. Same size hole for bolt. Wide variety of thread sizes, barrel lengths, flange designs... can be supplied in volume quantities.

NAIL-ON TEENUT — held by brads instead of prongs. Narrow rectangular base permits use where space is limited.



CAPPED TEENUT — for exterior use where strength and appearance are important. Cap can be supplied in any standard finish.

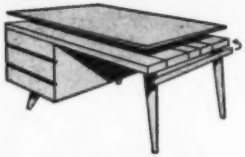
OCTOPUS — Teenut and sleeve combination for blind fastening of k-d furniture parts.

UNITED-CARR FASTENER CORP.
31 Ames Street
Cambridge 42, Mass.

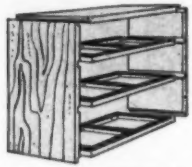
MAKERS OF DOT *FASTENERS*

WHAT CENTURY IS YOUR GLUING OPERATION IN?

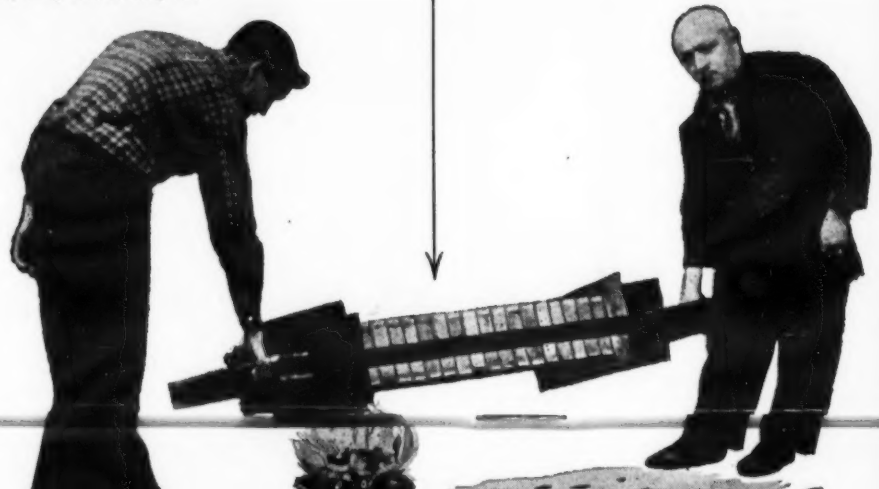
Thermatron installation at Guy Hobbs, Inc., Dallastown, Pa.



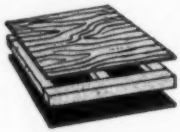
Core stock for desk, chopping blocks, etc.



Case clamp assembly of drawer, book case or cabinet.



Case clamp assembly of dresser, book case or cabinet.



Panel on frame doors, cabinets or furniture.

Today's production pace calls for nothing less than THERMATRON high frequency wood bonding.

Just as their medieval ancestors used to do, this master carpenter and his assistant photographed recently in front of their shop in Sorrento, Italy, are engaged in slowly moving a rack of freshly glued wooden boxes back and forth over a fire. When the glue sets, the boxes will be ready for their leather covering.

Don't smile at the pace and antique methods of these gentlemen. Even today in your modern high-production shop the wood bonding operation may remain pretty much the way it was in grandfather's day . . . Yet it doesn't *have* to.

Have *you* seen how THERMATRON high frequency generators, presses and other equipment bond wood in seconds instead of hours? Have *you* seen how THERMATRON slashes production costs, eliminates rejects, permits parts inventory reduction and frees valuable plant space for more profitable uses?

Write or phone today for literature and full particulars regarding a THERMATRON installation in *your* plant . . . No obligation, of course; just address Section WD-43.

Thermatron Division

RADIO RECEPTOR COMPANY, INC.

In Radio and Electronics Since 1922

SALES OFFICES: 251 West 19th St., New York 11, N. Y. WAtkins 4-3633
Chicago: 2753 West North Ave.
Factories in Brooklyn, N.Y.

Thermatron

Shop Grade California REDWOOD

adds appeal to Outdoor Furniture

Wood working and furniture firms are cashing in on the growing popularity of outdoor living with a wide variety of smartly designed Redwood outdoor furniture.

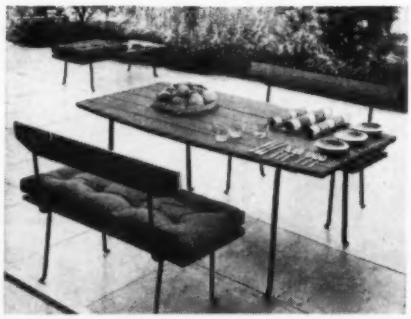
HOME HANDYMAN, using "do-it-yourself" kit, can produce this handsome Redwood, rope and plastic chair.

They use Redwood because, in addition to its workability, beauty, light weight and strength, Redwood is one of the most durable woods—resists decay and rot, warping and weather. And, since outdoor furniture requires a variety of lengths, they can use economical shop grade Redwood.

Get complete details about Redwood by writing the California Redwood Association, 576 Sacramento Street, San Francisco 11.

The Association, a Redwood information center, includes these leading Redwood lumber mills: Rockport Redwood Co., Simpson Redwood Co., Union Lumber Co., Warm Springs Redwood Co., Willits Redwood Products Co., Wolf Creek Timber Co., Inc., Arcata Redwood Co., Eureka Redwood Lumber Co., Hammond Lumber Co., Hollow Tree Redwood Co., Holmes Eureka Lumber Co., Hulbert & Muffly Lumber Mill, M & M Wood Working Co., Northern Redwood Lumber Co., The Pacific Coast Co., The Pacific Lumber Co.

REDWOOD'S LIGHT WEIGHT, beauty and durability are all put to work in this beautifully designed movable chaise.

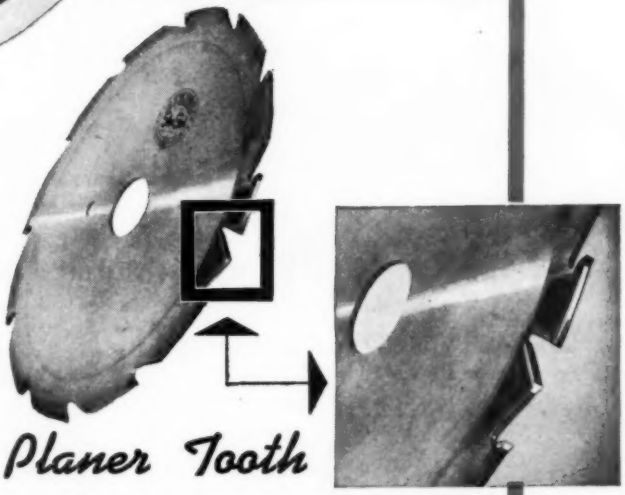


REDWOOD COMBINES with black wrought iron to produce an attractive surfboard table and dining benches.

EVERYONE'S TALKING ABOUT

OUR NEW TOOTH . . .

It's Changing The Glue Joint Furniture Industry!



Atkins Amazing Planer Tooth

. . . Makes the First Cut the Final Cut — No Extra Finishing Required!

- Gives a smooth, true cut every time.
- No burns, no glazing, no streaking of ripped surfaces.
- Glued joints bond tight—no weak assemblies.
- Perfectly balanced to avoid snaking.
- Design requires less teeth

— SAW COSTS LESS.

Run it once—you'll switch to the Planer Tooth Saw,* made exclusively by ATKINS!

Patent No. 2,657,720

ATKINS SAW DIVISION

Borg-Warner Corporation

INDIANAPOLIS 9, INDIANA

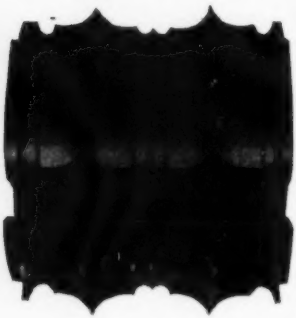
ATKINS Silver Steel SAWS

BW

VMT Drop-leaf Table Cutter
for Smoother, Faster Cuts

- less sharpenings
- less lost motion between set-ups
- more cutting mileage
- no blisters or surface scale

Bank on VMT Solid High Speed Steel Shaper Cutters to give you plus values at greater savings. Made of finest Tungsten High Speed Steel and precision-ground to pattern, VMT Shaper Cutters offer: maximum strength and durability for smoother faster cuts . . . positive accuracy of shape . . . and proper clearance assures uniformity of cut throughout life of tool. Why not give VMT Cutters a test?



VMT Shaper Cutter
Cuts 4 Drawer Pulls
Simultaneously

. . . Just off the Press — Send for your Copy Today! New VMT Catalog — complete with illustrations, details and how to order Virginia Machine Tool's Precision-Made Router Bits, Cutter Heads, Knives, Etc. for the Woodworking Industry.

Virginia MACHINE TOOL CO.

BASSETT, VIRGINIA

Precision-Made Tools For The Woodworking Industry—Standard or Milled to Pattern

Increase accuracy, cut fatigue with B&D SCRUGUNS*!
For speeding up all types of fastening and assembly work, you can't beat Black & Decker Scruguns! Powered by specially-designed, better-built B&D motors tailored precisely for the tools they drive, B&D Scruguns have the stamina and accuracy for the toughest . . . and finest . . . work. End handle models have specially-shaped handle for extra finger room; center-drive models are amazingly light and compact . . . both eliminate the fatigue of hand work. See all six models at your B & D distributor. For catalog, write: THE BLACK & DECKER MFG. Co., Dept. 2702, Towson 4, Maryland.
*T. M. Reg. U. S. Pat. Office
See "Tools-Electric" in phone directory for
Black & Decker
PORTABLE ELECTRIC TOOLS

cut costs and increase earnings with

PORTER METHOD ROUGH MILL

here's your guide to reduced costs with conveyorizing that fits any woodworking plant

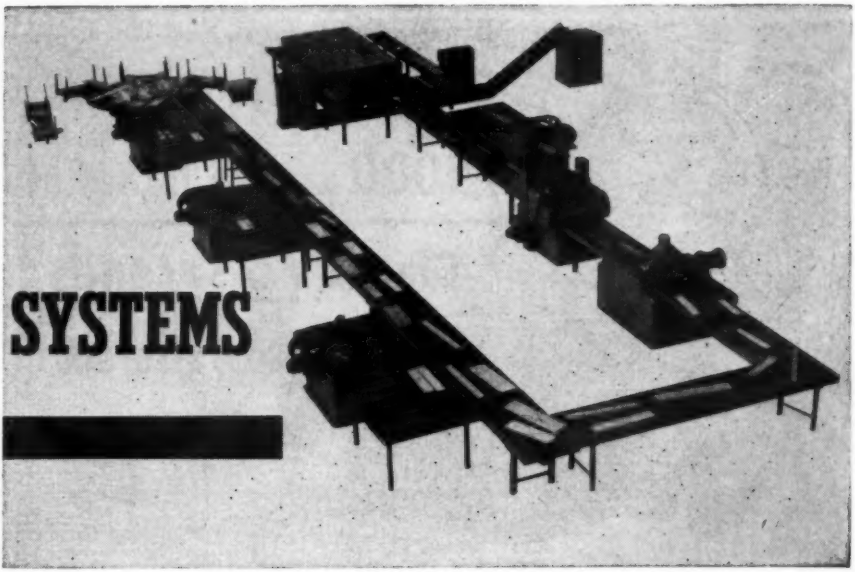
PORTER pioneering
has developed Rough Mill Systems that pay for themselves in economics effected by their installation.

PORTER engineering
meets each particular Rough Mill application. The floor plans of areas allotted for your rough mill operation, plus available machines are all that PORTER needs to make a proposed layout.

PORTER construction
PORTER SYSTEMS are rugged in construction. Formed channels are 3/16" steel, belt plates are 12-gauge steel; conveyor legs are 2" steel pipe — adjustable for height. Belts are top quality. Drive rolls operate on precision ball bearings. Motors equipped with overload relays and disconnect switch for protection of operator and motor.

PORTER service
PORTER conveyors move stock efficiently and economically between your machines, for maximum output. Your PORTER engineer is your constant consultant.

PORTER savings
Man-hours saved with the PORTER METHOD and equipment for Rough Mill operations are of primary interest to production-minded executives.



and here's a typical set-up that frees nine out of sixteen men in a rough mill operation!

This PORTER METHOD Rough Mill set-up conveyorizes corners to save space, frees nine out of sixteen men for other work.

Management's problem today is to reduce production costs. PORTER conveyorizing provides the answer. When you compare the footage to the man-hours required by the PORTER METHOD against the footage to the man-hours required with ordinary methods, you will discover how much more production with less man hours of labor you can gain, and how the total savings will more than pay for the cost of PORTER METHOD equipment.

Send this coupon today for your copy of "More Board Feet Per Day"

C. O. PORTER
MACHINERY CO.
666 Front Ave., N.W., Grand Rapids 4, Mich.

C. O. PORTER MACHINERY CO.
666 Front Ave., N. W.
Grand Rapids 4, Michigan

Send my copy of "More Board Feet Per Day".

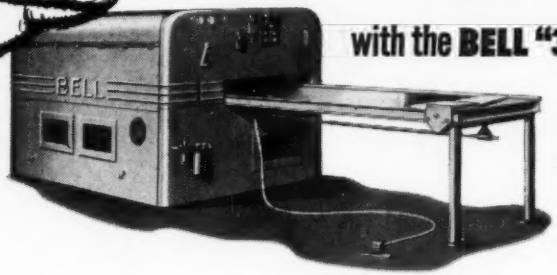
Name.....

Title.....

Company.....

Address.....

5000 square inches of Glue in 75 seconds with the BELL "300"



the unit with fully *Automatic Tuning*

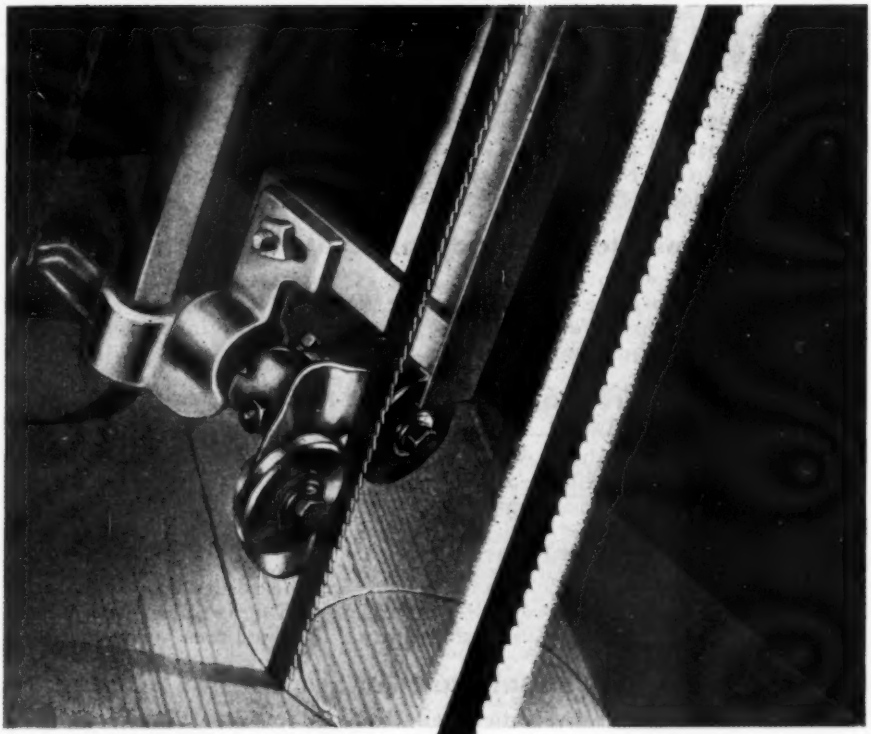
REGARDLESS . . . of moisture content of the stock, glue line area, thickness, TEMPERATURE OR VISCOSITY . . . Automatic Tuning, by means of the Bell Radio Frequency Generator **electrically adjusts** to deliver a full, constant rated power throughout the curing cycle.

Automatic Tuning with the Bell 300 results in:

1. **Shorter Curing Time . . . more production**
   Dependent upon panel thicknesses, number of glue lines, area and degree of cure desired . . . time varies from 15 to 90 seconds for average work.
2. **No Adjustments During Curing Cycle**
   The operator concentrates on laying up the next press load NOT, adjusting generator output.
3. **Fool Proof Operation**
   Automatic feed, automatic pressure, automatic cycling and AUTOMATIC TUNING makes the Bell 300 a machine that can be operated with the minimum of skill and training.

Bell *WOODWORKING MACHINES*

THE BELL MACHINE COMPANY, 71 Jackson Drive, Oshkosh, Wisconsin



Two Types of SIMONDS Narrow-Band SAWS

Which one should you use?

FILING TYPE — If you've got sharpening facilities, this may be the blade for you. Made of Simonds own special steel, they're unusually tough. A generous hook in the teeth makes cutting fast and easy. Round gullets and well-rounded saw backs prevent cracking. Burr-free teeth are filed extra-sharp . . . given a precision set. Tops in every respect, they're the finest, longest lasting blade of their type.

DISPOSABLE TYPE — Made of tough, alloy steel with only the tooth edge hardened. Simonds new Sabre Tooth Saw (or standard Skip-Tooth) provides extra gullet capacity and permits faster cutting. Flame hardened tooth edge provides many times more cutting life. Saves on blade replacement and sharpening costs — blade is merely thrown away when edge finally goes.

Both type blades are made in all standard widths, thicknesses and tooth sizes, in coils or welded-to-length. Now stocked by your Industrial Supply Distributor.

SIMONDS SAW AND STEEL CO. FITCHBURG, MASS.

Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon. Canadian Factory in Montreal, Que. Simonds Division: Simonds Steel Mill, Lockport, N. Y. Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada

For Fast Service from Complete Stocks

Call your SIMONDS Industrial Supply DISTRIBUTOR

How to prevent trouble when room temperature is below 75°

When room temperature falls below 75° you approach the critical point in the safe use of many glues. If you cure glue lines at room temperature you will be interested in the advantages offered by Perkins Casein Glue.

+ Consistently good bonds at low temperatures

Even when temperature falls as low as 40° you can safely cold press a casein glue line. On cold days when it would be impossible to use some glues you can continue production when you glue with casein.

+ Moisture Content Control less critical

Very dry wood—too dry for safe gluing with many adhesives—can be glued with casein. Except for extremes, moisture content of the wood has no effect on the satisfactory performance of a casein glue.

+ Easier to mix and to use

Perkins Casein Glues do not require the addition of a catalyst—just mix with water before use. Spreading is relatively simple and assemblies can be stored in an unheated area while curing.

+ Perkins Casein Glues offer superior bonds

Time has proven the strength and durability of casein glue. If you desire a glue joint as strong as any but with a minimum of gluing problems you can be sure that there is a Perkins Casein Glue to meet your needs.

WRITE TODAY FOR COMPLETE INFORMATION—NO OBLIGATION

Perkins Glue Company

Lansdale, Pa.

High Point, N.C.—Shawano, Wis.
West Memphis, Ark.—Kitchener, Ontario—La Chute, Quebec

OTHER PERKINS PRODUCTS INCLUDE: Urea, Phenolic and Resorcinol Resin Adhesives; Casein and Vegetable Glues; Prepared Hide Glues; Gluing Equipment and Glue Room Supplies.

Serving the Industry Since 1852

WOODS MOTORS are SUPERLATIVE

in

DESIGN
MATERIALS
WORKMANSHIP
PERFORMANCE

★ MOTORS

★ MOTOR ARBORS

★ SHAFTLESS MOTORS

2 and 3 phase 1-100 horsepower

Type L Motor Saw Arbor

This popular unit is being widely used for cross-cutting, ripping or dadoing operations, modernizing belt-driven machines, etc. Built in three diameters, 3¼", 4", and 5⅛", center line to flatted top or either side, it is rated from 1 to 15 HP at 3600 RPM or higher ratings and speeds when operated from a frequency changer. Oversize ball bearings with arbors up to 2¼" diameter are mounted to eliminate end play, operation may be horizontal or vertical and either totally-enclosed dust proof or ventilated construction can be supplied.

Write today for descriptive material or ask our Engineering Department the solution for any special motive problem.

MOTOR DIVISION

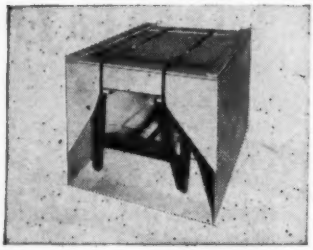
S. A. WOODS MACHINE CO.

27 DAMRELL STREET

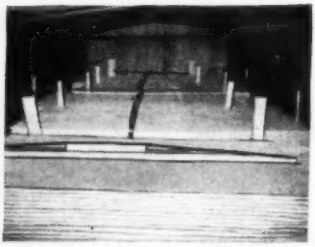
BOSTON 27, MASS.

Let Signode show you how to

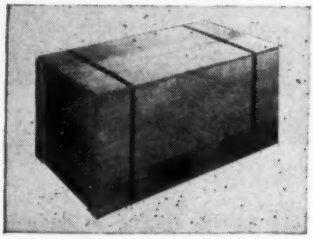
- **get better shipping protection**
- **lower packaging, handling costs**



Ship furniture?
Ask a Signode fieldman* to show you methods in packaging, protecting and shipping in containers reinforced with steel strapping that pay for themselves.



Ship plywood?
Want to lick bracing failures, side shifting, interlocking, scraping, end splitting? We'll send a fieldman* to show you how to do it!



Ship parts or assemblies?
If you ship component parts of wood manufactured items, such as hardware in bundles, boxes or crates . . . singly or unitized on pallets, our fieldman* will bring you tested and approved anti-pilferage packaging methods.

Ship millwork, dimension?
Bundling such products as KD millwork, screens, ladders, doors, dimension lumber in all sizes and lengths, KD furniture and trailer sections can be done at lower cost. Ask a Signode fieldman* for the right bundling methods.

*SIGNODE FIELDMAN . . . the man with the answers to your quest for more economical packaging, handling and protective shipping methods . . . can be reached by writing

SIGNODE STEEL STRAPPING COMPANY
2655 N. Western Ave., Chicago 47, Ill.

SIGNODE ®

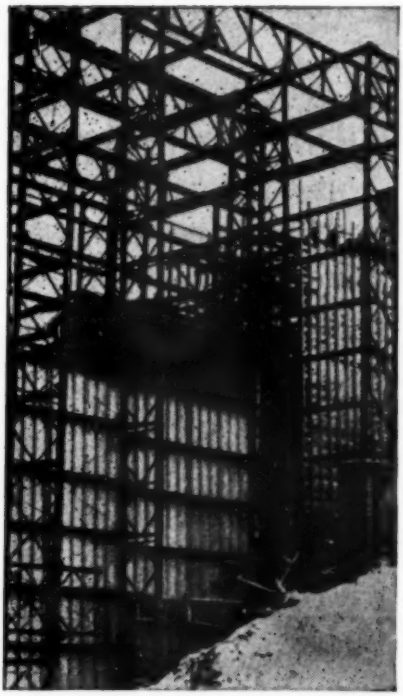
this seal means security in shipping

Offices Coast to Coast.
In Canada: Canadian Steel Strapping Co., Ltd. Montreal • Toronto • Winnipeg • Vancouver
Foreign Subsidiaries and Distributors World-Wide

Penacolite® Adhesive

replaces nails on Des Joachims Power Development

New technique
▸ *speeds work*
▸ *lowers costs*



WHEN the Hydro-Electric Power Commission of Ontario built the huge Des Joachims Dam, a new technique was employed. Plywood sheets and studs of the panels for concrete forms were "Penacolite" bonded. This factory prefabrication of forms which reduced "on-the-site" labor, permitted a faster job and substantially lowered costs.

Koppers Adhesives were chosen because they combined *all* the qualities required for such a difficult assignment. These bonds are waterproof. And they cure quickly . . . in just a few minutes at accelerated heat or a few hours at room temperature (70°).

You don't have to have as gigantic a job as Des Joachims to save money by doing better wood bonding faster with "Penacolite" Adhesives. If you want information on this Koppers product, write for our *free* illustrated booklet.

KOPPERS COMPANY, INC.

Chemical Division, Dept. WWD-25, Koppers Bldg., Pittsburgh 19, Pennsylvania

PENACOLITE® RESORCINOL ADHESIVES

The original waterproof, room-temperature-setting adhesives

HOW JOSEPH ARONAUER, INC., SCORED A NEW HIGH IN BOX SPRING FRAME QUALITY

Hand Nailing Eliminated!

Automatic Machine Nailing Takes Over —No Operator Required!

This Success Story can be yours!

Using an assembly line operation for the production of box spring frames, the Aronauer company, progressive New York manufacturers, installed the FMC system for nailing box spring frames This system includes an automatic progressor feeding mechanism for positioning and nailing automatically NO OPERATOR IS REQUIRED to actuate the nailing machine or to position the work for nailing. Personnel are needed only to fill the moving jigs. The system has proved faster, more economical and produces a better quality frame It also requires less floor space.

You Can Increase Production, Reduce Costs, Improve Your Product and Enjoy Greater Profits.

FMC's AUTOMATIC BOX SPRING FRAME NAILER
Can be easily adapted to a wide variety of nailing operations. Changeover time from one frame to another has been cut to a minimum through the adaption of the FMC Electric Nailpick Selector Drives all types nails, 3d to 10d. All models are open back; 48", 66" and 80" standard widths; other sizes are available.

Write Today *for Bulletin.. The FMC engineering staff stands ready to help you solve your production problems.*

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY
AND CHEMICAL CORPORATION
Packing Equipment Division, Riverside, Calif.
NM254

The
AWARD OF MERIT

The year 1955 marks two important events in woodworking history: the United States Forest Service celebrates its "fifty golden rings" anniversary and the Fir Plywood Association observes its golden jubilee. It would be impossible to estimate the value of the contributions made by either the government service or this association to woodworking progress. These contributions have been many and varied, reaching to all parts of our industry and, literally, from coast-to-coast.

Spend a moment thinking back over the advances made in the last few years. In doing so, surely we should mention as noteworthy a number of research projects, including the recent study made by the Weyerhaeuser Company.

But the important factors in all of this talk about progress can be stressed in a few generalizations. Progress has been made due to: 1) better machines, materials and techniques; 2) knowledge shared by all of us in a way utterly foreign to the early woodworkers who considered their "know-how" a trade secret; 3) a consistent and constant job being done to acquaint the public with all forestry products and programs.

As we announce the Second Annual WOOD WORKING DIGEST Award of Merit Contest, we are concerned especially with the last point—public information and education about the value of wood and wood products.

There was a time when we did not have to "sell" wood. People bought wood because it was the only material used to make beds, chairs, houses, or whatever was needed. During the last two decades we have seen metal, plastics and other materials enter into successful competition with wood. Deep inroads have been made into sales of lumber and wood products. We are still among the nation's biggest industries, but we are in a position where it is necessary to recognize competition and do something about it.

Many firms and associations, as well as schools of forestry and research laboratories, are doing a splendid job in "selling" wood products and in acquainting the public with the value of wood. Effective advertising, free literature, educational exhibits, radio and TV programs have all broadened the knowledge of wood and wood products.

Some of these organizations, who in the opinion of the judges have most successfully carried on such work, will receive the coveted WOOD WORKING DIGEST Award of Merit this year. One of these winners might well be your firm. Turn to page 44 to see how the contest is organized and how your firm can submit an entry.

E. McDaniel
Editor

Pointed PARAGRAPHS

Business volume slid slightly in '54 from the '53 peak, but still maintained a high level of prosperity without "the virus of inflation" or "the sacrifices of the battlefield," Budget Director Hughes has said.

Homebuilders in 1955 will have a busy year. Sparked by easier credit terms, non-farm starts will mount to 1.3 million at a value of $15 billion, according to Federal prophecies. The National Home Builders Association conducted a very successful 4-day exhibition in Chicago during January. Indications here, as elsewhere, tend toward the view that 1955 may well be another record year.

The modernization boom offers vast markets for wood products. Spending for repairs and home improvements in '55 will climb to $15 billion to equal new housing outlays, according to Government forecasts. Demand for hardwood paneling, ceiling and flooring is expected to rise in step with the trend toward "quality" housing exemplified by exposed wood surfaces.

The National Oak Flooring Manufacturers' Association is releasing some splendid publicity which should continue to boost the sales of this product. Included in their material is the statement by Dr. William J. Stickel, that wood floors and walks have an extra bounce which helps to cushion the shock transmitted to the skeletal system by walking.

Hardboard people are having a difficult time getting their product classified. It is now classified under the "paper and books" schedule of the Tariff Act. The investigation of the American hardboard industry, directed by the Senate Finance Committee, will end up as a report back to the S.F.C. on or before February 28.

As we go to press, news comes that the United States Plywood Corp. has acquired the assets and business of Associated Plywood Mills, Inc.

Save Time Save Money

use

DUO-FAST automatic TACKERS

DUO-FAST AIR TACKERS cut production costs on case backs, drawer guides, and numerous other jobs.

MORE WORK, in less time, using fewer workers—that's the story on Duo-Fast Automatic Tackers and Staplers.

WIDELY USED in cabinet and woodwork shops, furniture plants, sash and millwork factories, toy makers, for a wide variety of fastening jobs.

A COMPLETE LINE OF AIR TACKERS, HAMMER TACKERS, GUN TACKERS, STRIKE TACKERS, and AIR STAPLERS, including the model to save you time and money.

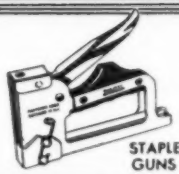
DUO-FAST GUARANTEE assures you of free service on Duo-Fast machines. An important money-saving feature.

DUO-FAST HAMMER TACKERS speed and simplify many tacking jobs. One-hand operation.

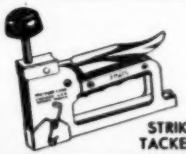
50 Sales & Service Offices in Principal Cities

WRITE TODAY FOR YOUR COPY OF THE DUO-FAST CATALOG & PROFITABLE SUGGESTIONS

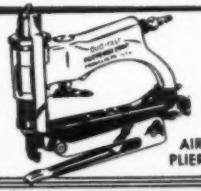
The *right* machine for each job is important. You'll find the *right* one in the *DUO-FAST LINE*



STAPLE GUNS



STRIKE TACKERS



AIR PLIERS

FASTENER CORPORATION

858 Fletcher Street • Chicago 14, Illinois

This issue of WOOD WORKING DIGEST carries a true story of fire hazards. In this case it is a southern flooring plant, but we have included the story in an effort to help our readers think through this important responsibility which rightfully belongs to management, but needs the cooperation of every employee.

A tremendously high December total brought 1954 construction contract awards to a record-breaking high of $19,770,207,000, up 13% from the previous record set in 1953. The F. W. Dodge totals for known future construction inevitably foretell the rates of activity of the country's second biggest industry over the weeks ahead.

Richard G. May, vice-president of the Association of American Railroads, says that various substitutes such as concrete, steel and plastics have been tried, but none can match the advantages of wood ties in low cost, light weight and relatively long life. May said that about 3000 ties are used for every mile of track.

Plans and predictions for 1955 have come to us from many organizations. All of them are most optimistic.

The Wood Office Furniture Institute plans on additional promotion, creation of new sales aids and literature and development of additional prints of Institute films for showing on TV and to live audiences. All this is intended to stimulate awareness for the need of office modernization and of the advantages wood office furniture can offer.

WOOD WORKING DIGEST

Second Annual Award of Merit Contest

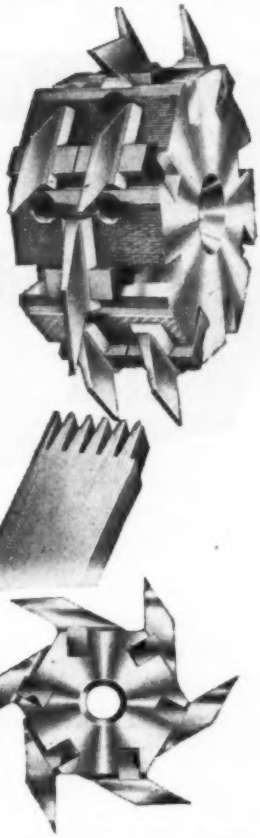
Plan now to enter and send for your official entry blank. All firms, associations or educational institutions may enter.

Closing date, March 31, 1955.

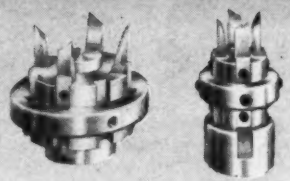
"The one bright spot on our cost sheets!"

"It's hard to find something to be cheerful about when you look at the average cost sheet these days. Maybe that's why we feel mighty good about the way our Jones & Orth Cutter Heads turn out the work for us, help us get bigger production per shift, and hold down costs!

"Change-overs and adjustments are quick to make too, and mechanical grief is practically unknown. Those heads sure get OUR O.K.!"



Hole and Plug Cutters



Heavy duty cutters to make tapered plugs, or cut tapered holes. Write for details!

JONES & ORTH

CUTTER HEAD COMPANY

385 SOUTH MAIN STREET
MEMPHIS 3, TENN.

BOX 3064
SEATTLE 14, WASH.

Write Seattle or Memphis for the name of our dealer nearest you.

Catalog? You bet! Let us send you your copy! How else can we serve?

Give Your Dry Kilns A New Lease on Life with Moore Metal-Insulated Kiln Doors

It costs you nothing to get an estimate on replacing your old doors with Moore Metal - Insulated Kiln Doors . . . Send us dimensions of your door openings for price and complete information.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE FLORIDA | BRAMPTON ONT CANADA | VANCOUVER B. C CANADA | NORTH PORTLAND OREGON

Comments from THE NATION'S CAPITAL

By Arnold Kruckman
Washington Correspondent

It is indicative of our foreign trade relations that one immigrant enters the country every two minutes and one emigrant leaves every seventeen minutes. Tariff problems of American industry, agriculture and labor, are scheduled for discussion in a big way during the opening months of the year. At one meeting in Washington it is to be brought out that our tariff protection has been reduced approximately 75% in the past 20 years; that the average rate on dutiable items has dropped from 50.02% during the 1931-35 period to slightly over 12% today; that measured by the average tariff burden the total trade of the United States stands about 8 from the bottom among 45 trading nations. In other words, the United States is definitely a low-tariff country.

It is shown that our imports per capita have increased from $15.92 in 1938-39 to $70.32 in 1951-53. This represents more than a 50% increase in physical volume. We are importing far more than at any previous time in our history! It is shown sharply that any remedy we may have against injury from imports under the Escape Clause of the Trade Agreements Act has been virtually scuttled by Executive refusal to back up the Tariff Commission, an Agency of Congress.

GATT comes up in immediate discussion in Congress, and otherwise, in Washington in various ways. The question is often asked what is it? The Constitution vests Congress with sole authority to regulate our foreign commerce. However, GATT, an international body, which mainly functions in Geneva, Switzerland, has assumed constantly increasing power to regulate our tariff and trade. It is about to be given yet greater power. Of course these powers are subtracted from the Constitution.

Congress says GATT was not authorized by the Trade Agreements Act but was fathered by the State Department, and has never been ratified by Congress. It is the purpose of the investigations in Congress, and the meetings in Washington, to

get to a better understanding of what needs to be done in order that the industries jeopardized may be protected. Just under 100 industrial, cattlemen's, agricultural and labor organizations are represented at the hearings in the Capital, and the meetings held variously in Washington, D.C.

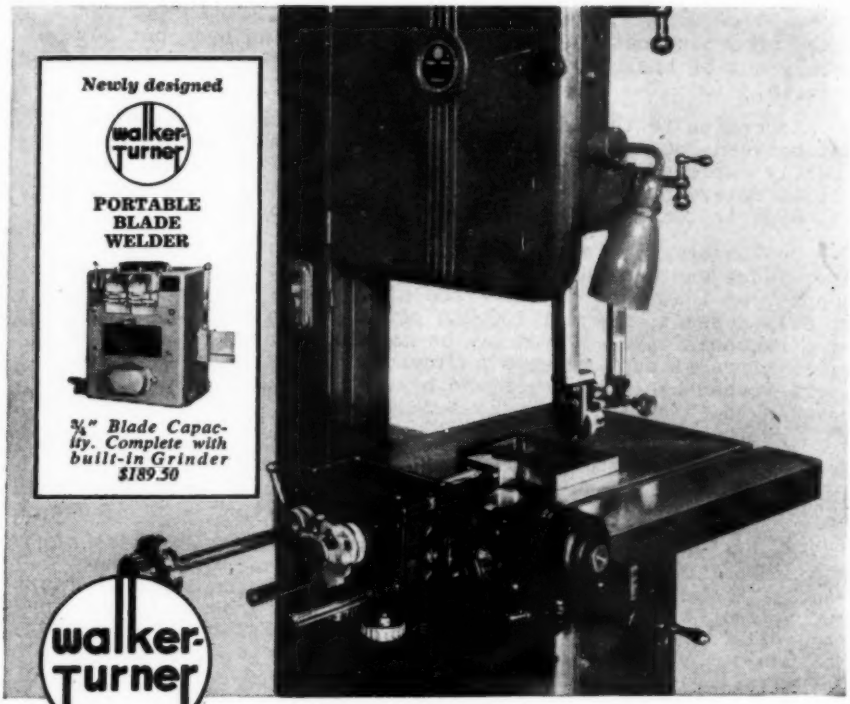
The hearings in the Capital are held by the Senate Committee on Ways and Means under the Chairmanship of Senator Jere Cooper of Tennessee. These hearings will probably continue for weeks. The subject will be H.R. 1 introduced by Senator Cooper to extend the authority of the President to enter into trade agreements and to extend them for three years. In addition to the three-year extension, H.R. 1 authorizes the President to reduce duties in three alternative ways: (1) 15% below the July 1, 1955 rates by reduction of not more than 5% in each of the three years under the extension; or (2) to 50% of the rates existing on January 1, 1945, in the cases of items which are not being imported or which are being imported only in negligible quantities; or (3) to 50% ad valorem in case of any rates now in excess of 50% ad valorem. H.R. 1 embodies the Administration's tariff recommendations as set forth in the President's Foreign Economic Policy Measures delivered to Congress in January.

Any organization or person qualified to do so will be permitted to testify. It is necessary to write to the Clerk of the Committee on Ways and Means, Room 1102, New House Office Building, Washington 6, D.C.

It is pointed out that among the organizations outstandingly represented at the hearings and at the meetings will be the Hardwood Plywood Institute; the U. S. Wood Screw Service Bureau; the Insulation Board Institute; the Hardboard Association, and, in the words of Secretary Edward R. Place, "many others."

Several woodworking industries will be importantly represented by Robert N. Hawes, who will testify in the hearings before Congress, and in the meetings. The Chairman of the meetings, outside of Congress, will be O. R. Strackbein, who also is Chairman of the Nationwide Committee of Industry, Agriculture, and Labor on Import-Export Policy. Anti-dumping measures which have been devised by the Bureau in discussion with the industry and labor will come up for extensive analysis at these meetings.

At the White House it is planned to hold conferences with representatives of various international groups and shipping interests to discuss the problems of international trade and tariffs. In all likelihood those interested in the production of wood products will be represented from all important nations of the world. It is particularly anticipated that Japan and Southeast Asia and the Near East, Australia, parts of Africa and Europe will take part in these particular discussions. Undoubtedly among the primary subjects will be the cost of labor. Obviously workers across the Pacific and across the Atlantic earn far less than the workers in the United States, so long as the industries of the United States can be maintained in competition with the foreign businesses. It is reported a small



VARIABLE SPEED DRIVE MAKES THIS *LIGHT-HEAVYWEIGHT* THE UNIVERSAL MACHINE IN YOUR SHOP

The Variable Speed Drive on this LIGHT-HEAVYWEIGHT 16″ Band Saw adjusts to the *exact* cutting speed for any stock you work—plastics, composition, wood, non-ferrous metals and even tough steel.

A turn of the Hand Wheel does it – sets blade speeds **in stepless variation from 50 to 450 SFM in low range, or 500 to 4500 SFM in high range** – while the machine is running. An indicator shows the exact speed.

No time is lost in belt-changing, no efficiency is lost because of incorrect cutting speeds or an inadequate speed range. See this versatile precision-built LIGHT-HEAVYWEIGHT at your Walker-Turner Distributor's.

There is much more to the LIGHT-HEAVYWEIGHT story that the Walker-Turner Distributor in your area can tell you. You'll find him expert on all industrial equipment and a specialist on LIGHT-HEAVYWEIGHTS – a good man to know. He is as near as your phone: just look under "TOOLS" in the yellow pages of your local Telephone Directory. Call him today for the helpful information he has to offer.

WALKER-TURNER

• DIVISION •

KEARNEY AND TRECKER CORPORATION

PLAINFIELD, N. J.

DRILL PRESSES—Hand and Power Feed • AIR FEED DRILL PRESS ATTACHMENT • RADIAL DRILLS • Wood and Metal Cutting BAND SAWS • TILTING ARBOR SAWS • RADIAL SAWS • JIG SAWS • LATHES • SPINDLE SHAPERS • JOINTERS • BELT AND DISC SURFACERS • FLEXIBLE SHAFT MACHINES

lumber producing business in Ontario, Canada has been put completely out of business by reason of the importation of Siberian products.

According to the latest word the most liberal estimates are that between four and five million workers are directly, or indirectly employed in production for export. It is still difficult to determine the percentage that is devoted to our commercial exports that are on the free list as imports.

Our information about exports and imports is very confusing. Those who know declare employment attributable to dutiable imports, or that part of our trade affected by the tariff, actually doesn't exceed 1,200,000 persons. On the other hand Mr. Strackbein says: "This may be compared to some 15 million, or ten times as many workers employed directly and indirectly in import-vulnerable industries and branches of agriculture and the services to which they give rise."

Our exports reached an excess over imports to the point of $8.6 billion in 1947. That was the widest gap of the postwar era. By 1950 it had dropped to $1.4 billion. In 1951 and 1952 the gap again began to recede.

Four Foreign Operations Administration-sponsored teams of 26 men from Iceland are being conducted from one end of the country to the other to learn wood products business among other industries. Other groups are being conducted around the country for similar purposes from Japan or Liberia. Exporters now may ship unmanufactured wood and sawmill products to Hong Kong as well as several other Chinese ports.

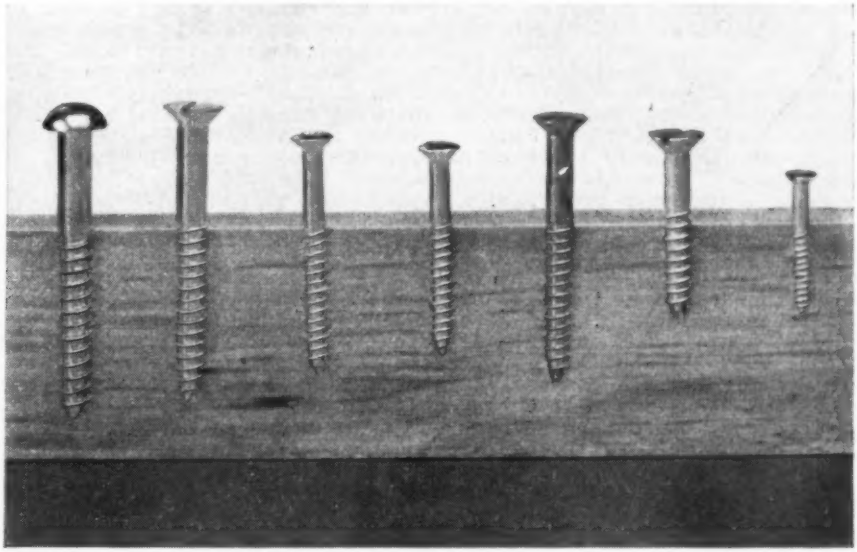
The U. S. Tariff Commission announced a public hearing at 10:00 a.m., EST, on March 22, 1955 concerning hardwood plywood. Public notice of the investigation has already been given. Those who wish to be heard are requested to notify the Secretary of the Commission, in writing, at least three days in advance of the date of the hearing.

Korea has asked the Foreign Operations Administration to help in procuring telephone poles. It also has asked for more lumber and railroad cross ties. Spain has asked us to send them railroad ties. Paraguay has asked the FOA to provide a saw mill.

President C. D. Hudson of the National Wooden Box Association is of the opinion that the President's State of the Union Message to Congress has created a political atmosphere favorable to high employment and good business in 1955. Mr. Hudson thinks the most controversial part of the message is the request for reduction of foreign trade barriers and an increase in Federal minimum wage from the present 75¢ to 95¢ an hour. Southern industry is expected to bring strong pressure against the minimum wage.

The wooden box industry ended 1954 on an upward volume curve as compared with the first half of the year, but the improvement was not enough to change materially earlier fore-

YOU CAN COUNT ON CONTINENTAL FOR EVERY FASTENER NEED!



Continental Gives You The Widest Selection of Wood Screws

Their vast inventory and prompt delivery can help improve your production schedule

Continental offers you a selection of over 40,000 styles and sizes of standard wood screws—far more than any other producer in the industry.

Whatever your own needs may be . . . Phillips recess, slotted, clutch recess, ornamental heads, or any type of metal or finish . . . you can be assured that Continental's vast selection will guarantee you the most effective style. And all standard wood screw orders are promptly shipped out within 24 hours.

It will benefit your production schedule to check with Continental. They offer you the world's widest selection of wood screws.

Continental Screw Co.

Manufacturers of Holtite Fastenings
NEW BEDFORD, MASSACHUSETTS, U. S. A.

casts of a drop between 15% and 20% in over-all production as compared with the previous twelve months.

Members of the wooden box industry who utilize public motor carriers for LTL shipments will be extremely interested in Subject No. 27, Docket No. 67, as issued by the National Classification Board, representing the nation's motor truck lines, which proposes an increase on lumber and related forest products of approximately 70% on LTL shipments and approximately 43% on truck load shipments. The proposed increases are found in National Motor Freight Classification Tariffs No. 12 (western) and No. A-2 (eastern), Item 57,600 on "Lumber, Veneer, or Forest Products: Box, Crate or shipping Drum Material, Wooden or Wooden Fibreboard or Paper, Covered in Shooks or Panels, No. 1, loose (LTL, only if weighing each 25 lbs. or over), or in packages."

The proposed new ratings would increase LTL shipments of the specified items from Class 50 to Class 85, and volume or truck load shipments from Class 35 to Class 50.

Encouraged by the success of the all-wood military truck bodies after 14 months of rigorous Army road tests, the hardwood industry will come out with a radically new type of commercial truck body in 1955. It is expected to be the wood industry's future bid for the commercial truck market, development of the van-type wood body will be watched with interest by commercial truck body manufacturers. The new truck body has been authorized by the National Lumber Manufacturers Association. Inside dimensions of the commercial wood body will be approximately 12' long, 6' high and 90" wide. It will have a load capacity of about 2 tons. A comprehensive account of the origin and development of this new type of all-wood truck body is featured in a booklet "Wood Research No. 17" which may be obtained by writing to TECO, 1319 18th Street, N.W., Washington 6, D.C.

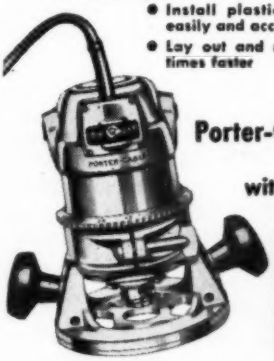
Bureau of the Census, during the first five months of 1954, made what might be called a test survey of immense interest to dealers, merchants, manufacturers, industrialists, contractors and householders themselves. It was done purely as a trial at the initiative of the Bureau itself without special financing by Congress. The survey itself covered what would have been the expenditure of $3 billion if it had been spent by the householders and others who buy under similar circumstances. It should be understood clearly that it was not an expenditure of $3 billion by the Bureau of the Census, but was an expenditure that might represent $3 billion if the money was put in circulation by the purchaser or the person who deals with the contractor or merchant or industrialist.

It should also be clearly understood that this undertaking was made wholly on the initiative of the Bureau of the Census because the Bureau had been insistently, and intelligently, urged to supply such information by those interested, as, for instance, the people in the woodworking industries. It is hoped that further surveys will be made on a regular quarterly, or annual basis.

Free
ROUTER MANUAL
Shows How to
Cut Carpentry Costs

Send today for this free 48-page illustrated "Router Manual." Prepared especially for shops that want to know the quickest and easiest way to do the woodworking jobs which many builders sub-contract . . . jobs which you're already set up to handle — and handle profitably. For example, manual shows how to:

- Install plastic-laminate sink tops easily and accurately
- Lay out and rout stair stringers 10 times faster
- Make plain and fancy molding from scrap lumber
- Cut graceful contours for built-ins, fireplaces, etc.



Porter-Cable PORTABLE ROUTER
with Amazing NEW KAMGRIP® CHUCK

Cut Laminates Without Chipping.

Rout Stair Stringers 10 times faster.

Cut Decorative Edges Accurately.

Model 511, 22,000 RPM
8 amps. $125.00

Model 514, 20,000 RPM
12 amps. $209.00

In this new Porter-Cable Router an entirely new type chuck grips the bit tighter, keeps it aligned and assures precision cuts. The Kamgrip Chuck, exclusive with Porter-Cable, works on an entirely new principle that prevents shank galling, bit run-out, chatter and kick. Standard on new Models 511 & 514, PLUS more powerful Universal motors, oversized sealed bearings, Dial-O-Matic depth adjustment.

Porter-Cable
Quality Electric Tools

MAIL COUPON TODAY!

PORTER-CABLE Machine Co. 5192N. Salina St., Syracuse 8, N.Y.
(In Canada write: Strongridge, Ltd., London, Ont.)

Please send complete information on your new routers with Kamgrip Chuck. Also send free Router Manual and name of nearest dealer.

Name.....

Address.....

City.....County.....State.....

Manufacturers of SPEEDMATIC and GUILD Electric Tools

Again, in addition to its many other services to the woodworking industry, WOOD WORKING DIGEST is announcing a contest. This will be the Second Annual WOOD WORKING DIGEST Award of Merit Contest. It is a way which we have chosen to commend the efforts of associations, firms and schools who are doing the most to help maintain and develop the demand for wood products.

In view of the difference between the activities of associations and companies within the industry, the contest has been conducted in three categories—one for the associations, one for the companies, and this year a third division is being added to cover schools of forestry and other educational institutions.

For 1954, the judges will select one winning entry in each classification for both the association and the company divisions, and one winning entry from the entire group of schools submitting entries.

In addition Honorable Mention citations, providing recognition to selected entries other than the winners, may be issued at the discretion of the judges.

Each winner's citation will be a handsomely mounted scroll beneath a glass plate on polished beveled wood base. Winners will be publicly announced and awards made at the Annual Meeting of the Forest Products Research Society to be held at Seattle, Wash., in June, 1955.

The contest will be open to those companies, associations, or institutions that, during 1954, have promoted (1) the desirability of wood for use over other materials and (2) the use of wood products.

The "desirability of wood" is defined as meaning promotion of a general nature suggesting wood as usable

Second Annual
WOOD WORKING DIGEST
Award of Merit
Contest

In Recognition of Outstanding Service in the Promotion of Wood and Wood Utilization

material. And by the "use of wood" is meant anything that is made of wood in any form.

There will be five divisions of entries which will be open to all associations, companies and educational institutions as follows:

(a) lumber, dimension stock, veneer, plywood.

(b) products made from wood waste

(c) finished wood products (furniture for example)

(d) wood components for structural or other parts such as beams and girders, boat timbers and plane parts

(e) machinery and materials that make possible a more expanded market for wood.

In addition to the citations, winners will be announced and their entries displayed at the F.P.R.S. meeting. They will also be published in WOOD WORKING DIGEST. The WOOD WORKING DIGEST Annual Award of Merit is a coveted and appreciated distinction and furthermore, winners are making an outstanding contribution to the industry. As such they will be given local and national publicity.

The selection of the award winners will be made by a committee of individuals representing both industry and association groups.

All voting returns will be held in strict confidence insofar as committee member voting is concerned. Committee members will not vote on entries in the classification they themselves have entered.

For full information . . .

Use postage free post card opposite page 128.

All contest entries must be in by March 31, 1955.

LETTERS To The Editor

In November the Hitchcock Publishing Company issued the first hard cover WOOD WORKING DIGEST DIRECTORY. Contents included an inclusive listing of equipment and supplies for the woodworking industry with names of manufacturers; a history of woodworking machinery; a glossary of gluing terms and a section describing various woodworking associations, officers and purposes. There were several other special sections in the book and helpful tables for woodworkers. The 400-page reference book has been very well received by the industry and we are publishing just a few of the hundreds of letters sent to us. Your copy of the DIRECTORY may be obtained by writing to the editor of WOOD WORKING DIGEST, 222 E. Willow Ave., Wheaton, Illinois.

"We have received the Directory and enjoy reading it. Our foremen, also, are getting a lot of valuable information from this Directory. Thank You."

Zickgraf Hardwood Company
Franklin, North Carolina

"Your hard covered WOOD WORKING DIGEST Directory arrived and is a welcome source book of information.

"The Helpful tables appear to be excellent. Keep up the Help Yourself as it is a good way to check on new industrial literature. The "Who Makes It" is, of course, the most used section, so it's completeness is appreciated.

"I'll be looking forward to next year's issue."

University of Missouri
Columbia, Missouri

"We have used your magazine very often for reference and have received valuable information on the well written articles and I am sure that your directory will be referred to very often."

Stanley E. Smith
Cook's Falls, N. Y.

"It certainly is one of the finest reference books yet to be published for the woodworking industry, and having a hard cover makes it really a book to withstand rough handling.

"Again, Thanks a Million for our Copy."

Century Mfg. Co.
Pittsburgh, Penn.

"I wish to acknowledge the receipt of your hard back WOOD WORKING DIGEST. I found this to be a very helpful reference book. We have only had this a few days and already several inquiries have been made as a result of it."

Arnot Jamestown Division
New York 19, N. Y.

"We received the 1955-56 WOOD WORKING DIGEST Directory which we know will prove useful in locating machinery, equipment and supplies through the classified section. The book is composed nicely and we are happy to receive this handy directory.

"Thanks very much for remembering us."

Wabash Screen Door Co.
Memphis 2, Tenn.

"Thank you for the beautifully bound copy of the WOOD WORKING DIGEST Directory which I received last week.

"It was accepted, as are all your issues, with open arms. I have been saving all copies of the Digest for almost two years and am acquiring an excellent reference library. The hard cover Directory is certainly an asset to this collection both in information and appearance.

"This has proven to be a very helpful guide in locating material and equipment as well as sources. I particularly enjoyed the article in the latest Directory, "The History of Wood Working Machinery." I would like to read more like it.

"In my opinion, I feel that the WOOD WORKING DIGEST is doing an outstanding job in the coverage of all phases of the industry.

"May I offer my congratulations and again my appreciation for a job well done."

Herman Miller Furniture Co.
Venice, Calif.

"We have just received your woodworking digest directory and are very grateful for it. We believe this book and especially like the new hard cover.

"We are sure we will have many uses for this book in locating machinery and finding new ideas on some of our machinery.

"Please accept our sincere thanks."

Northway Products Co.
Rensselaer, Indiana

"We acknowledge with thanks, the receipt of your latest WOOD WORKING DIGEST Directory.

"We receive many publications from the wood working industry, but without a doubt, yours is the finest and most complete of them all. The hard cover on the 1955-56 edition makes it especially attractive. The article on the history of woodworking machinery also proved very interesting."

Supreme Casket Company
Chicago, Illinois

"We appreciate receiving our copy of the 1955-56 WOOD WORKING DIGEST Directory.

"We find this directory to be well written, all inclusive, and an excellent addition to our library for constant reference work.

"Thanking you kindly, we are,"

Peter Cooper Corporations
Gowanda, New York

"We have just received our New Directory for which we offer our thanks. This is a very wonderful book covering the woodworking trade. I believe that you should be complimented very highly for a good job well done. We remain,"

Newco Products
Newcomerstown, Ohio

"We thank you very much for the 1955-56 WOOD WORKING DIGEST Directory. It certainly will be a valuable addition to our research library, as it's contents contain so much informative matters on machinery.

"Frequent requests are made of our Mechanical Efficiency Department for information on many types of machinery, their use, availability, etc. The Directory will be invaluable as a reference.

"We already have made good use of it in planning our Big Machinery and Equipment Exposition as shown on enclosed brochure.

"You will receive a personal invitation from Mr. S. P. Deas, our Secretary-Manager, to attend.

"Your thoughtfulness in sending us the Directory is appreciated."

Southern Pine Association
New Orleans 4, La.

"This letter is to acknowledge receipt of your 1955-56 WOOD WORKING DIGEST Directory and to express our appreciation for same. We find it very useful in locating machinery, equipment and supplies and are grateful to have it for reference. Thank you kindly for sending it to us."

Chicago Mill & Lumber Co.
Chicago, Illinois

"I have received my copy of the WOOD WORKING DIGEST Directory.

"I think that you gentlemen have done a great job for the industry and one that will be long remembered by producers all over the country.

"I would not part with my copy for many times the annual subscription rate.

"Please accept my congratulations for a great job well done."

Lasater Lumber Company
Paris, Tennessee

"The Directory has been received.

"It is an excellent piece of work and undoubtedly will come in very handy as a reference within this organization."

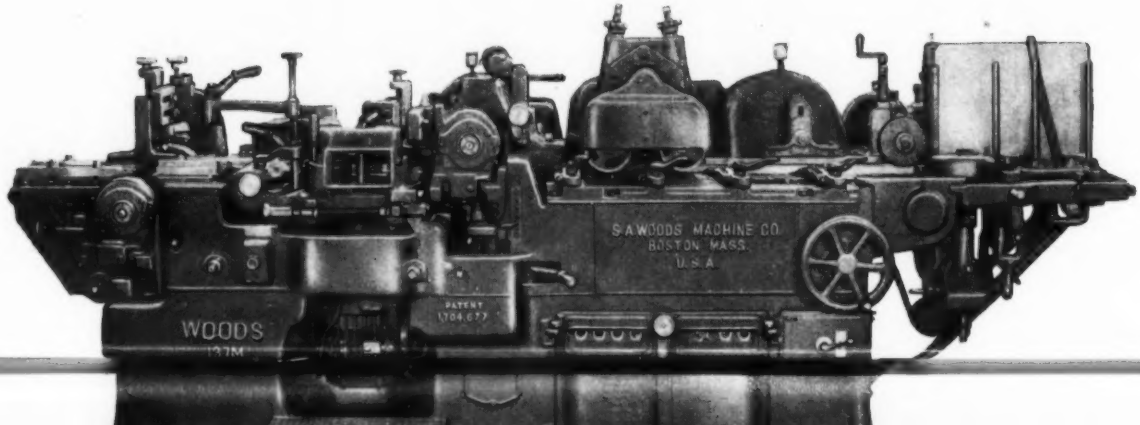
United States Plywood Corp.
New York 36, N. Y.

Serving the Industry Since 1852

It's Masterful!

This 6" LAG BED ELECTRIC MOULDER

built by "The Moulder of Woods"®



WOODS' 137M MOULDER
shown with hopper feeding attachment
Feed rates to 160 f.p.m.

A moulder adapted to every woodworking plant that does moulding work of any kind; furniture, cabinets, chairs, trim and interior finish.

Modernize to Economize!

When this S. A. Woods' 137M Moulder is installed in your plant—you have acquired one of the finest woodworking machines available to the industry.

Built rugged for many years of service with a minimum of upkeep expense. Masterfully designed to achieve a high rate of top quality production, and a machine that is a real miser when it comes to down-time. To learn more of the many exclusive features of the 137M Moulder — and how they can bring substantial economy in your production, write S. A. Woods Machine Company today.

S. A. WOODS MACHINE CO.

27 DAMRELL STREET

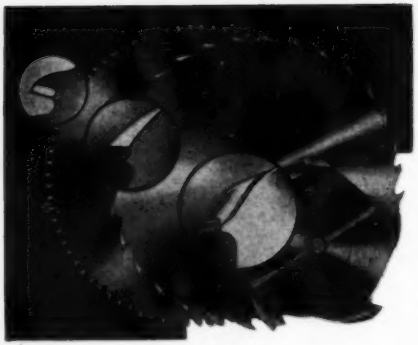
BOSTON 27, MASS.

Branch Offices: ARK., Little Rock CALIF., San Mateo N.Y., Mount Vernon
ORE., Portland TENN., Memphis VA., Richmond

Canadian: B.C., Vancouver, Akhurst Mchy. Co. ONT., Galt, Canada Mchy. Co.

Export Dept. United States Machinery Co., 90 Broad St., New York City

Why TEETH STAY SHARP *in* VICTORY CARBIDE TIPPED SAWS



- ***because*** "VICTORY" was one of the first companys to manufacture carbide tipped saws and pioneered many of the developments which are standard today.
- ***because*** "VICTORY" Carbide Saws are quality manufactured with job selected Tungsten-Carbide tips specially processed to Super-tough Steel blades and DIAMOND WHEEL ground to "Razor Sharpness".
- ***because*** "VICTORY" Carbide Saws are custom-built by experts backed by 38 years of saw manufacturing experience to meet the requirements of YOUR Equipment, the kind of operation, and type of material being cut.
- ***because*** "VICTORY" Carbide Saws are true and smooth cutting due to correct rakes and ample side clearances to eliminate burning & binding—dynamically balanced and actually tested.

There's a "VICTORY"

Carbide Tipped Saw for every job whether cutting Hardwoods, Plywoods, Plastics, Laminates, rough crooked-grained lumbers or other tough materials. Enjoy the advantages of INCREASED PRODUCTION, REDUCED OPERATING COSTS, SMOOTHER, FASTER CUTTING. Investigate these advantages for your plant today.

WRITE TODAY

for FREE literature or ask your supplier for full information on VICTORY Carbide Tipped Saws.

Victory CARBIDE SAW & TOOL CO.

3856 N. ASHLAND AVE.
CHICAGO 13, ILLINOIS

Sharpening & repair shop at
73 W. Industrial, P.O. Box 3026
Memphis, Tennessee

Keys to Carbide Economy

By Arthur Segal

THE ever-increasing trend to carbide cutting tools by both large and small shops, establishes the relatively new, almost diamond-hard cutting tool metal, cemented carbide, as a permanent development in the woodworking, plastic, aluminum, magnesium and graphic arts fields.

Almost every company has purchased carbide tools in some form on the basis of its unusual smooth cutting performance and the great economy indicated by its amazing characteristic to stay sharp many times longer than the best steel tools.

The successful usage of carbide tools has given unbelievable production increases with fantastic savings. There have been also been problems and failures. Almost all the failures can be directly charged to a lack of understanding of carbide in some phase of either tool design, proper application, care of carbide tools, or the importance of proper sharpening.

Effect Of Tool Design

It would be impractical to enter into the complex details of carbide tool design here, but through gradual dissemination of such knowledge will come more applications of carbide tools through greater confidence, and better maintenance of carbide tools through better understanding. There are many cases where carbide cutting tools are used and serviced without realization of the thought and planning behind their design details. There are many cases also where it is assumed that carbide tools consist of the mere application of carbide metal to a steel tool, with little or no consideration given to a specific design.

Interlocking combinations of tool angles, cutting forces, carbide characteristics, machine characteristics, position of tool and material, power, feeds, and speeds are a few of the design elements a manufacturer works with, combined with the experience in the cutting of numerous types of materials under many divergent conditions. This is why on particular applications it is essential to provide complete information on (1) speeds and feeds, which effect the chip load per tooth, (2) thickness of material to be cut, effecting the gullet or flute design, (3) type and condition of material being cut, effecting clearance angles, hook or radial rake, helix angles, and tooth form, and (4) the type of machine on which the tool is used, for mounting details.

As odd as it may seem, in some tools design may start with the chip as the factor in determination of the number of teeth or cutting edges. Improper gullet or flute capacity may result in compression of chips that could consume more power than would be required for cutting the chip from the parent material. An example of the relation between the machine operating

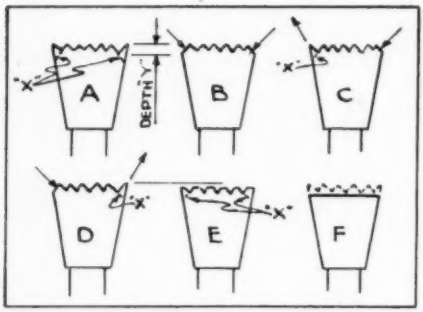


Figure 1

characteristics and the tool design is illustrated in the formula, chip load per tooth =

$$\frac{\text{Feed rate in feet per minute}}{\text{R.P.M. x number of teeth x 12}}$$

Another illustration of interlocking design elements in the tool is the development of shear in a carbide saw, through the use of: (1) hook angle, (2) alternating top bevel, and (3) alternating face angle. The combination of any of these results in the development of a "true shear angle" for the tooth. It is possible to reduce one and increase the other approximately maintaining the same true shear angle, but effecting the direction of the cutting forces. There is further interlocking between the density of materials cut with cutting speed and surface feet per minute, shear angles, and carbide grades. There are no hard and fast rules to determine correct tool design. Performance is the only criterion. It is, therefore, possible that every application may not meet with immediate success. The understanding that changes in design can have a great bearing on results, may provide those who have tried carbide and given it up with the realization that corrective actions can be taken that can result in success. For those who service tools in their own plants or service tools for others, it should reveal the importance of care in preserving the original angles, clearances, concentricity, and design factors which can be so easily altered through carelessness.

Application Of Carbide Tools

Carbide tools do not require ideal conditions in order to operate successfully. They have given good results on machines that were far from being in perfect condition. No tool, however, whether steel or carbide, can give maximum economy and peak performance on machines having worn bearings or arbors out of alignment. Many a hollow-ground steel blade has been used on a machine in such condition, with the objective of obtaining a smooth planer cut through the elimination of

Figure 2

side cutting teeth. The loss in tool life is high and any economy doubtful, because of the binding and heating of the blade. The desire, then, is to go to carbide blades with the idea of obtaining the economy of the longer tool life. The result is failure. The hollow-ground saw, unable to cut sideways, gave a smooth cut but with binding. The carbide blade, precision ground and normally capable of giving a planer cut on a good arbor, can cut sideways with a result that the blade immediately reflected the condition of the machine and resulted in immediate failure insofar as its intended accomplishment. In actuality, the blade did not fail. It was misapplied through its use as a means of compensating for a faulty machine. Unfortunately, the fact is

often lost that the cost of maintaining a machine arbor in true condition is extremely cheap, compared to a year's run of tools—whether steel or carbide—at half efficiency.

Misapplication can occur also through jamming tools through a cut. Any tool that cannot cut freely cannot cut efficiently. This is particularly significant in the cutting of veneers and plastic tops, where surface finish is highly important and where lost time in machine loading and take-off cannot be made up in jamming cuts without the false results of apparent failure of the carbide tool. Such misapplication results in tool damage, loss of tool life, machine deterioration from load stress, operator fatigue, and unnecessary second operations that can be avoided in many cases by merely correct feeding of the work to the tool.

The cutting of wet woods, extremely soft metals, or similar materials in a condition requiring greater-than-normal clearance angle with a cutting tool not having the proper clearance for such application, results in apparent failure of the carbide tool to accomplish the job. The provision of correct information concerning the type of material cut can prevent such misapplication and turn failure into excellent results.

Figure 3

Figure 4

The attempt to use fine-tooth blades in the cutting material meant for coarse-tooth blades, can result in chips binding the gullet. Although carbide tools come closer to all-purpose operations, more so than any other type of tool ever developed, they still have limitations beyond which efficiency is lost, bordering on failure.

The amazing performance of carbide often leads to the attempt to exceed its limitations. Fortunately, this problem has decreased by the better understanding of its correct application, gained through its growing usage. The advent of carbide tools has, perhaps, produced as much progress in pointing out the losses caused by poorly maintained equipment as the savings it has created through its own long life and smoother cutting characteristics.

Care

If cutting edge damage, caused by mishandling of tools, were visible to the eye as it is under a strong magnifying lens "tool care" would take on a very important aspect. This applies to steel tools as well as carbide tools. The problem of careless habits in the han-

Figure 5

dling of tools is never made prominent, because of the hidden nature of both the damage and the cost. Education of tool care is no more difficult than education of safety. Production wise, it will eliminate many lost hours, result in better quality work, eliminate second operations, and serious errors due to tool breakage or tool deflection. Cost-wise, it means direct savings in repair charges, longer total life of the tool, more production through less non-

Figure 6

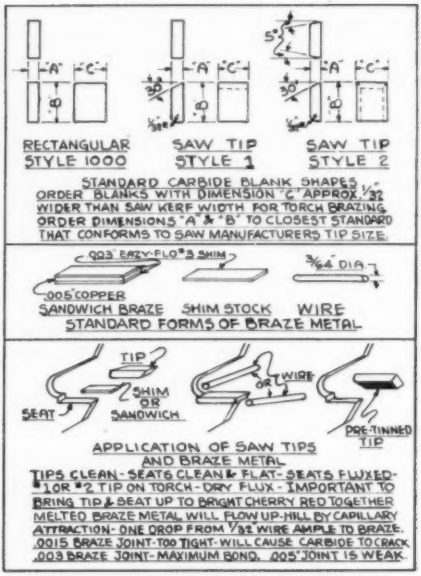

RECTANGULAR
STYLE 1000
SAW TIP
STYLE 1
SAW TIP
STYLE 2
STANDARD CARBIDE BLANK SHAPES
ORDER BLANKS WITH DIMENSION "C" APPROX. 1/32 WIDER THAN SAW KERF WIDTH FOR TORCH BRAZING
ORDER DIMENSIONS "A" & "B" TO CLOSEST STANDARD THAT CONFORMS TO SAW MANUFACTURERS TIP SIZE.
.003 EASY-FLO #3 SHIM
3/64 DIA
.005 COPPER
SANDWICH BRAZE
SHIM STOCK
WIRE
STANDARD FORMS OF BRAZE METAL
TIP
SHIM OR SANDWICH
SEAT
WIRE
PRE-TINNED TIP
APPLICATION OF SAW TIPS AND BRAZE METAL
TIPS CLEAN - SEATS CLEAN & FLAT - SEATS FLUXED - #0R #2 TIP ON TORCH - DRY FLUX - IMPORTANT TO BRING TIP & SEAT UP TO BRIGHT CHERRY RED TOGETHER
MELTED BRAZE METAL WILL FLOW UP-HILL BY CAPILLARY ATTRACTION - ONE DROP FROM 1/32 WIRE AMPLE TO BRAZE.
.0015 BRAZE JOINT - TOO TIGHT - WILL CAUSE CARBIDE TO CRACK
.003 BRAZE JOINT - MAXIMUM BOND. .005" JOINT IS WEAK.

Figure 7

productive downtime in changing tools, and over-all, a high reduction in cost.

Cemented carbide is made up of extremely hard tungsten carbide particles, so finely ground that the powder will pass through a 1200 mesh screen. These fine tungsten carbide particles are bonded together with cobalt through pressure-molding and sintering operations, which at no time results in any melting together of the particles. In grinding, these fine particles are further cut. Although this bonding process results in an extremely strong structure, it is evident that these extremely small particles can be broken away from the tool without damage being visible to the eye. The loss of these small particles is sufficient to cause a build-up of cutting pressures sufficient to destroy the efficiency of the tools. Dead-load shock can damage any tool. Such damage is apparent in a steel cutting tool by a rolled-over edge, heating of the tool in the cut, and rapid dulling. It

Figure 8

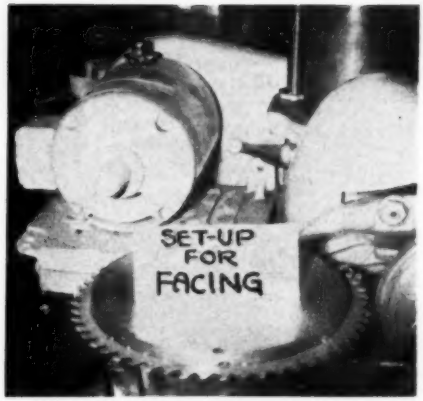


Figure 10

appears as a chipped tooth in a carbide cutting tool. The damage is the same in both cases, except that it is more noticeable in carbide, due to its initial characteristics of cutting to a higher finish and normally longer life.

It is apparent, therefore, that the commonplace practice of throwing tools together in a box, stacking cutters and saw blades on top of each other, without any protection or consideration given to the direct contact of metal with the cutting edges, or the careless dropping of tools on metal surfaces, such as machine tables, and other such similar practices all result in tool damage and unnecessary cost. The starting point for correct tool handling can be quite simple and inexpensive. As an example, a piece of wood, bored with a number of blind holes, becomes a very convenient rack for carbide tipped router bits and other similar small tools. Saw blades are usually furnished with cases for their protection, but a

Figure 9

Figure 11

Figure 12

plywood partition case can be constructed at a very low cost. A tool placed on a piece of wood, leather, cloth, or paper, is a tool protected and the mark of an efficient operator. The change-over to the use of such protective cases and racks in itself makes apparent to the machine operator that tools are being given precautionary considerations. Subsequent instruction of the operators will be found to be a very reasonable expense, compared to the savings gained through better tool handling practice.

Although it is quite simple to tell when a steel cutting tool becomes dull both by sound and by cutting pressure, the condition of dullness in a carbide tool is not so readily apparent. Carbide tools will continue to cut by increasing the feed pressures up to the point where the forces acting on the tooth become great enough to break the carbide or tear the tooth out. Carbide dulls so uniformly and so slowly that the increased feed pressures being applied are not perceptible, likened to "lifting the calf each day until it becomes a bull." Such damage to carbide tools is unnecessary. Dulling can be determined by shining a bright light on the cutting edge and noting if there is a reflection produced by a slight rounding of the cutting edge. In time, it will become easy to determine the degree of dullness economically safe for rapid sharpening and maximum tool life. Strange as it may seem, the inability of carbide tool users to determine when carbide tools become dull has been responsible for so much unnecessary tool breakage, chipped cutting edges, carbide breakage, high maintenance costs, poor quality work, and unnecessary expense that this factor becomes most important in the understanding of carbide tool limitations.

Maintenance Of Carbide Tools

Satisfactory performance for the entire life of a tool can only be obtained through correct maintenance. Many companies do not have a stand-by carbide tool, to put on a machine while the dull tool is being sharpened. In many cases, this results in the continued operation of the dull carbide tool, because of the dislike to revert back to steel tools with their rougher cutting characteristics and rapid dulling, particularly to finish a run or on hard cutting operations. In many instances, the forced operation of dull carbide tools has resulted in the build-up of tool pressures sufficient to fracture the carbide tips and, in some cases, break the tool. Operation of any tool

Figure 13

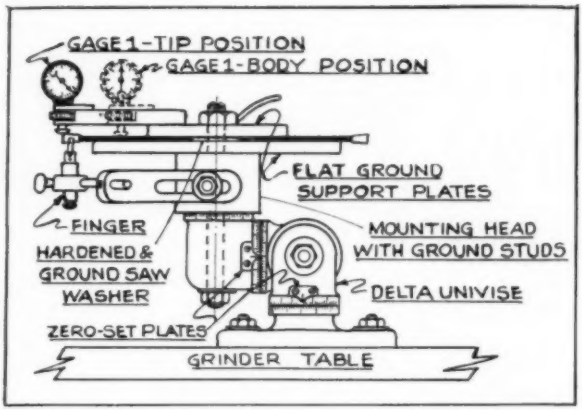


Figure 14

beyond the point of normal wear is costly from the standpoint of tool surface that must be removed to recondition the cutting edge. It is quite obvious that low-cost tool maintenance lies in the hands of the carbide tool user.

Because of the user's desire to get carbide tools back on the machines as rapidly as possible, good tools have been placed in the hands of people unqualified to properly service them. Although these individuals have done their best with the information and equipment they had, too often improper grinding practices and improper knowledge of clearance angles resulted in damage to the tools, rather than in reconditioning. With carbide tools coming into common usage in all phases of industry, information on maintenance becomes as important as correct application and care. Much damage can be done to good carbide tools by incorrect regrinding, and it may be that an understanding of poor regrinding practice will prove as useful as knowing some of the proven methods.

Because of their widespread usage, the greater sensitivity of the thin body section and their perhaps more-than-average selection as target of discussion, carbide saws can be used as an example with a great degree of the detail applying also to other tools. As strange as it may seem, it is altogether possible to dull a carbide saw by grinding it with the utmost intention of sharpening it. Although not always discernable to the tool grinder, there is a great pressure built up between the face of the diamond wheel and the hard carbide tip during the grinding operation. In a 180 grit diamond wheel, the diamonds do not protrude from the bond material much more than .0005". If the tooth being ground is not supported properly, or if the diamond wheel is being fed

Figure 15

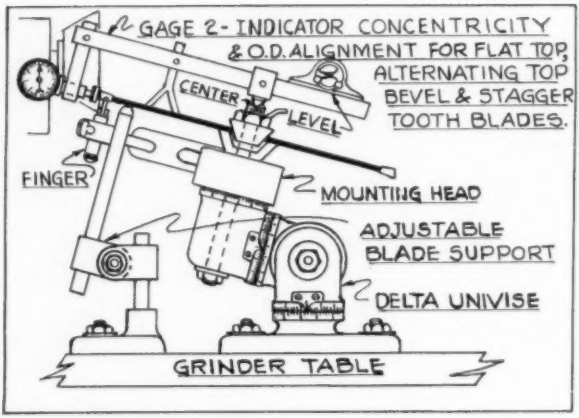


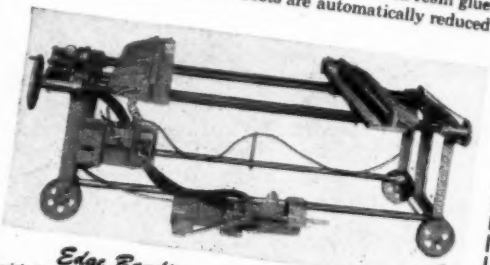
Figure 16

faster than a free-cutting rate (about .00025" per pass), a small, very high-frequency vibration is set up. Although this vibration is imperceptible, it results in the very fine tungsten carbide particles being broken away from the saw tip, particularly on that edge of the tip where the wheel is leaving or going away from the cutting edge. The damage will be visible only on high magnification of the ground tips. When put on the machine the blade, however, will push hard, vibrate in the cut, lead off, dull rapidly, or perhaps not cut at all, depending upon the degree of damage done. Figure 1, is an exaggerated sketch illustrating a carbide saw tooth under a highly magnified condition to show the normally invisible jagged edge obtained by grinding with coarse grit diamond wheels. Although appearing smooth and sharp to the naked eye, the hills and valleys of the wheel marks will run to a depth of from .002" to .004", depending on the grit size of the diamond wheel used, as indicated as "A". The corners of a tip in the condition illustrated in "A," will break off in from 25 to 50 hours of operation, as shown by the dotted lines denoted by "X." Diagram "B" indicated a condition that can be obtained directly off the grinding wheel or as a result of the break-down of the corners, as described in "A". Such a tooth has no sharp corners and the forces set in an angular direction, indicated by the arrows. If all of the teeth in the blade were in this condition, the saw would not cut at all. Another possible condition is shown in Diagram "C." Here only one corner is sharp although jagged, and will break off along the dotted line, as indicated by "X." The forces acting are shown by the arrows and this tooth would have a tendency to lead to the left. Diagram "D" is similar to "C," except that the forces would tend to make this tooth lead to the right. It is altogether possible and often the case with improper grinding, that each of these conditions described exist in any manner of combinations on one saw blade. The thinner the saw blade in kerf width, the more perceptible and severe will be the reaction of the blade to such improperly ground tips. The practice of finishing off a blade by leaving the grinder machine controls set and indexing the teeth past the diamond wheel, often referred to as "sparking-out," will not help. It is a waste of time, for as shown in "E," nothing save knocking off the top of the ridges has been accomplished. By properly supporting the saw blade

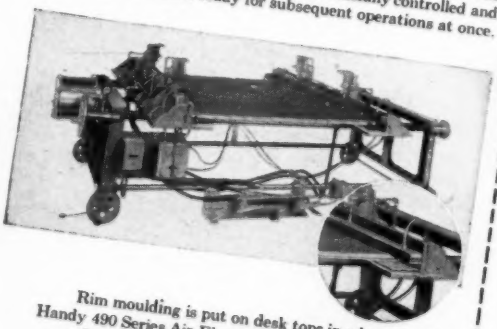
NEWER . . . BETTER . . . FASTER

BANDING and Speed BONDING

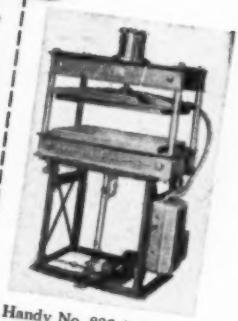
Alert production men are increasingly putting to work specialized Handy equipment for doing tough jobs far better and much faster than out-dated methods. These modern, automatic, low cost machines cash in on the advantages obtainable with resin glues and properly applied heat. Costs are automatically reduced.



Edge Banding is now done almost instantaneously with Handy Series 480 Air-Electric Edge Banders. These units, available in a complete range of sizes, quickly adjust to handle rectangular or square tops of any thickness. The fast cycle and heat are automatically controlled and the veneer is bonded ready for subsequent operations at once.



Rim moulding is put on desk tops in a hurry by the Handy 490 Series Air-Electric Wood Moulding Bonders. Long tedious work and the use of hand clamps are eliminated. Now the binding of tops is accomplished in minutes, and they are ready for further operations promptly, while freeing valuable space formerly required during slow glue curing. This new way is better and faster.



Handy No. 836 Automatic Air-powered Electric Hot Platen Presses are the modern way to quick-bond panels to frames, veneers to table tops, and other work where correctly applied heat and pressure is the answer to today's higher production needs. The cost is low, the results are great. Consult Handy

HANDY
Manufacturing Company
2436 West Lawrence Ave.
Chicago 25, U. S. A.

METAL MOULDING GOES ON TABLE TOPS
GOOD and FAST

With the Handy No. 604 Air-Electric Moulding Inserter, all the operator does is put in any top, operate the controls and remove the perfect, finished job. Handles all shapes, all widths of moulding and often eliminates notching. Features cushioned double-roller power; it's better and faster.

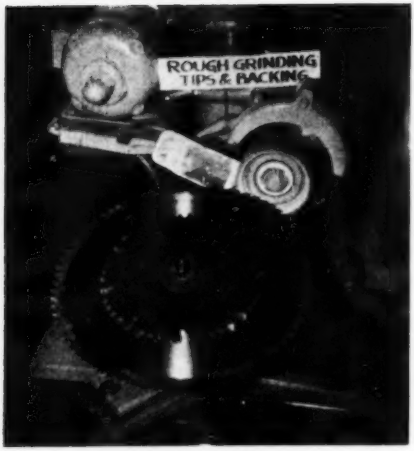


Figure 17

during the grinding operation, as shown in the following pictures and diagrams, and by using a fine grit diamond lapping wheel in the finishing operation, the proper smooth and sharp cutting edge, shown in "F" of Figure 1, will be obtained. In this finishing operation the diamond wheel must be fed to at least a depth of .005" at a feed rate of approximately .00025" per pass.

There are many methods and many ways to accomplish the same results in grinding. Machines, fixtures, and setups may vary, but carbide is not difficult to maintain once good fundamental practices are established. The brief description following is only one of several ways to set up carbide tools for grinding. It will, perhaps, illustrate the steps, serve as a guide, and possibly result in an idea for better methods for better service to the trade.

Steps In Retipping And Grinding

Continuing to use a carbide tipped saw blade as an example, Step 1 would be thorough cleaning of the blade. Although blades should be maintained in a clean condition while on the machines, they are often sadly neglected. Build-up, particularly around the clearance face of the tips, should be removed regularly from the tool when in use and, of course, must be removed before sharpening. In Step 2, the blade should be checked for straightness and tension, as shown in Figures 2 and 3, and at the same time trued to an indicator to within .004" maximum run-out, as shown in Figure 4.

Maintenance of the blade to correct straightness and tension is extremely important, for no blade can cut efficiently when it is vibrating or wobble cutting. The problem of maintaining the blade is quite simple for the service shops who have men familiar with the operation and for those companies who are fortunate enough to have mechanics familiar with the technique of smithing blades. In most cases, the average blade merely requires light blocking on the anvils to keep it in good shape and in those cases where blades are quartered, extremely dished, or otherwise badly damaged, they can be returned to the factory and handled by qualified sawsmiths.

The proper amount of tension can be quickly learned by checking new blades and blades giving good performance. The tension check is made by tipping the blade against a wood support and

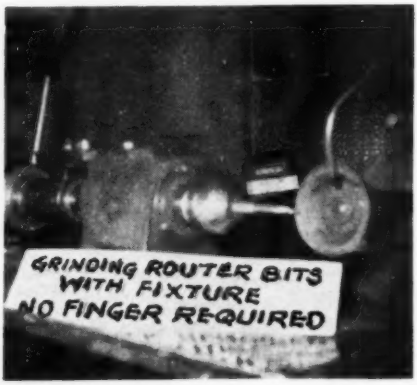
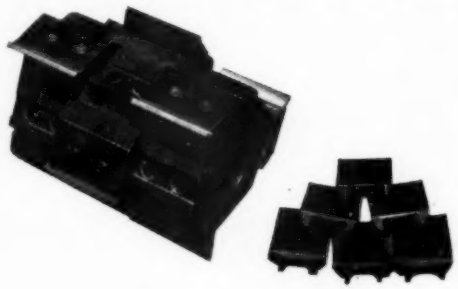


Figure 18

American Seating Company reports Carboloy cemented carbide knives increase production runs by—

50 to 1



Molder head and carbide knives used in sticker operation for seat slats at American Seating. Carbide blades require regrinding only after a 5,000-piece run. Although these are six-knife molder heads, only three blades are mounted in the heads.

The Job: Machining slats for stadium and auditorium seats from spongy, gritty southern elm, air-dried. Much harder to cut than kiln-dried.

Problem: To speed up production, while avoiding tear-outs—a great problem unless knives are sharp and machine conditions are right.

Solution: Former steel knives were replaced by Carboloy® Grade 883.

Result: Carboloy carbide knives, reground after every 5,000-piece run as compared with former 100-piece runs, save much downtime and many man-hours for resharpening. Finish quality is greatly improved.

For equipping woodworking tools, Carboloy cemented carbide blanks are made in a wide range of sizes and shapes. These now include, as standard stock items, Braze Type Knife Blanks up to 4" in length, and Solid Knife Blanks up to 10¼" in length. Ask your tool manufacturer. Or, send coupon for technical data and sources of supply.

"Carboloy" is the trademark for products of the Carboloy Department of General Electric Company

Carboloy Created-Metals for Industrial Progress

CARBOLOY

DEPARTMENT OF GENERAL ELECTRIC COMPANY

11128 E. 8 Mile Ave., Detroit 32, Michigan

Please send me:

☐ Bulletin WW-20, *Carboloy Cemented Carbides and Their Application in the Woodworking Industry.*

☐ List of toolmakers supplying tools equipped with Carboloy cemented carbides.

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

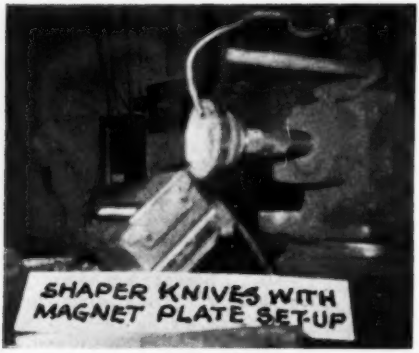


Figure 19

pressing the center away from a straightedge. The blade should fall away from the straightedge uniformly to the outer edge of the saw body, as indicated in Figure 3. If such inspection indicates a marked deviation from the same check made on a new or blade of proven performance, the blade should be retensioned by a qualified sawsmith. Operation of improperly tensioned blade produces singing or whistling, leading-off in the cut, rough cutting, loss of tips, cracking and breaking of tips from vibration. It may also be responsible for rim cracks from vibration fatigue failure, although runout

Figure 20

and play in the machine arbor are often responsible for development of such failure.

In the event that one or more broken tips have to be replaced, the broken particles remaining in the tip seat should be removed by melting the braze metal and brushing the seat with a clean wire brush. Step 3 concerns the preparation of the tip seat by light filing, as shown in Figure 5. A fine cut rectangular file should be used and the carbide seat made flat for full bearing and square to the direction of rotation. In the event that the steel

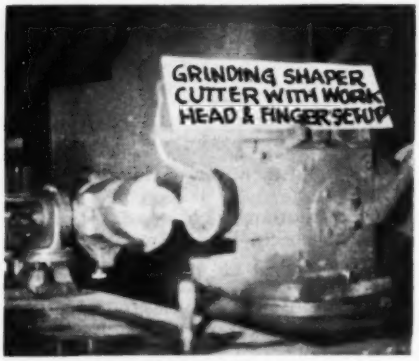


Figure 21

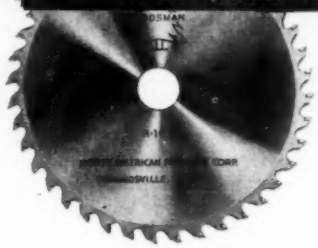
backing is damaged, do not attempt to use braze rod to build it up. It should be welded and recut. This latter operation will require adept grinding to bring the rebuilt tooth and tip seat into alignment with the body. The blade will undoubtedly have to be straightened and retensioned by a qualified hammersmith to offset the disturbing effect of the welding heat on the saw body. Careful heat control will be rewarded by a lessening of the distortion and the amount of smithing necessary to return the blade body to its original condition. It is usually best to leave out a tooth completely broken if the blade retains satisfactory cutting action, rather than distort a good blade by welding heat.

NORTH

for CARBIDE SAWS

that stay on the job longer

IF IT TAKES THE BEST TO SATISFY YOU



BUY WOODSMAN—*NEW, SMOOTH CUTTING, THIN-KERF,* EXTRA QUALITY *MAGNI-SHARP* BLADE WITH THE *TRUE CARBIDE DESIGN.* YOU'LL GET THE MOST *FINELY-FITTED, LOW COST* CARBIDE BLADE EVER MADE . . . YOU CAN RELY ON NORTH AMERICAN'S *GUARANTEED PERFORMANCE.*

For complete description of each type of WOODSMAN blade and detailed information as to its application, write for our FREE catalog, Data Sheet and Price List.

IMMEDIATE DELIVERY

NORTH AMERICAN PRODUCTS CORP.

P.O. Box 210, Center Grove Rd., Edwardsville, Illinois

AMERICAN

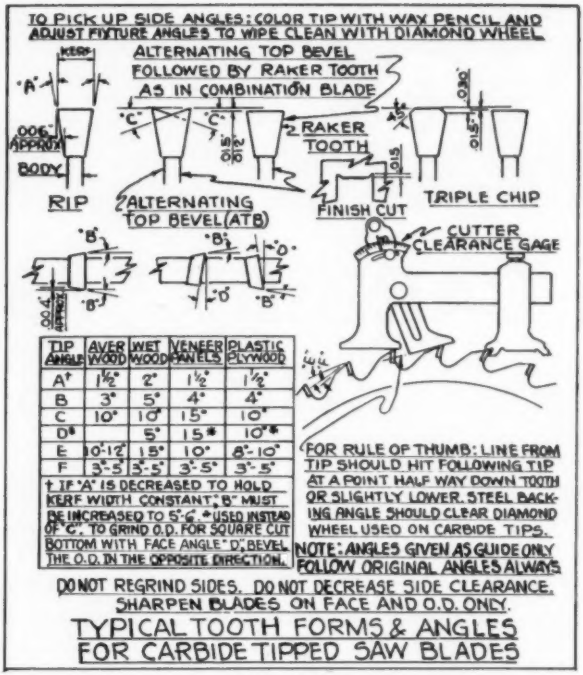
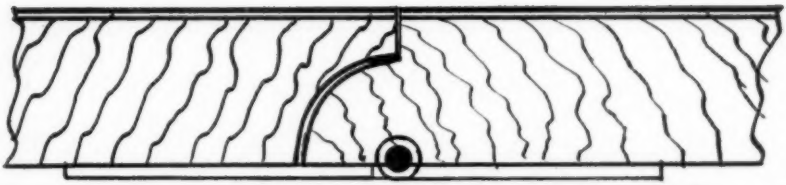

TO PICK UP SIDE ANGLES: COLOR TIP WITH WAX PENCIL AND ADJUST FIXTURE ANGLES TO WIPE CLEAN WITH DIAMOND WHEEL
ALTERNATING TOP BEVEL FOLLOWED BY RAKER TOOTH AS IN COMBINATION BLADE
KERF
"A"
.006" APPROX
BODY
"C"
"C"
.090"
.090"
2 RAKER TOOTH
.015"
.090"
.150"
RIP
ALTERNATING TOP BEVEL (ATB)
FINISH CUT
TRIPLE CHIP
CUTTER CLEARANCE GAGE
"B"
"B"
"D"
"D"
"B"
"B"
.004" APPROX
TIP ANGLE | AVER WOOD | WET WOOD | VENEER PANELS | PLASTIC PLYWOOD
A† | 1½° | 2° | 1½° | 1½°
B | 3° | 5° | 4° | 4°
C | 10° | 10° | 15° | 10°
D‡ | | 5° | 15° | 10°
E | 10°-12° | 15° | 10° | 8°-10°
F | 3°-5° | 3°-5° | 3°-5° | 3°-5°
† IF "A" IS DECREASED TO HOLD KERF WIDTH CONSTANT, "B" MUST BE INCREASED TO 5°. "G" USED INSTEAD OF "C", TO GRIND O.D. FOR SQUARE CUT BOTTOM WITH FACE ANGLE "D", BEVEL THE O.D. IN THE OPPOSITE DIRECTION.
FOR RULE OF THUMB: LINE FROM TIP SHOULD HIT FOLLOWING TIP AT A POINT HALF WAY DOWN TOOTH OR SLIGHTLY LOWER. STEEL BACKING ANGLE SHOULD CLEAR DIAMOND WHEEL USED ON CARBIDE TIPS.
NOTE: ANGLES GIVEN AS GUIDE ONLY FOLLOW ORIGINAL ANGLES ALWAYS
DO NOT REGRIND SIDES. DO NOT DECREASE SIDE CLEARANCE. SHARPEN BLADES ON FACE AND O.D. ONLY.
TYPICAL TOOTH FORMS & ANGLES FOR CARBIDE TIPPED SAW BLADES

Figure 22

In Step 4, either induction or oxygen-acetylene brazing may be used. Oxygen-acetylene is flexible, easily handled, and will give excellent results. This latter method is described here. The blade is set up for brazing, as shown in Figure 6. The seat is fluxed and, if it is desired to keep burn marks off the saw body, a light coat of flux can be painted on each side of the saw body about two inches around the tooth to be brazed. One of the secrets of good brazing lies in the cleanliness of the tip and blade seat during this operation. When tips are received, they should never be completely unwrapped until ready for use. If tips are handled they should be immersed in carbon tetrachloride or similar solvent which will remove any oil or grease. If a tip is over six months old, it should be sand blasted or cleaned on a grinding wheel to remove any oxide from its surface before brazing. While the flux on the saw blade is still wet, lift the tip from the carbon tetrachloride by means of tweezers, or forceps, push it down on the seat letting the flux come up around it. Dry the flux around the tip with an oxygen-acetylene torch. A No. 1 or No. 2 torch will give good heat control on small to medium size carbide tips. Figure 7 shows several standard carbide saw tip shapes which should be selected to conform with the type of tip being replaced in the blade. There are several forms of braze metal which can be applied as illustrated in Figure 7 also. The sandwich braze is more often used in the brazing of long, thin pieces of carbide where the copper sheet serves as a cushion, preventing crack-



Drop Leaf Joint Now Cut Easily and Accurately!

New design cutter head with Marcoloy carbide knives solves problem!

The drop leaf joint has always been a trouble-maker in production. Carbide knives stay sharp many times longer than steel knives.

Marcoloy's new design of the knives insures no change in the form when the knives are sharpened.

The design of these knives maintains proper clearances on male and female parts of joint.

Marcoloy has two different designs—a single cutter head to make both cuts for single spindle shapers and a two cutter head design for two spindle shapers.

Write for complete information or send sample of your product for quotation.

Marcoloy, Inc., Springdale, Conn.

MARCOLOY
CARBIDES

MARCOLOY Carbide Knives and Cutter Heads

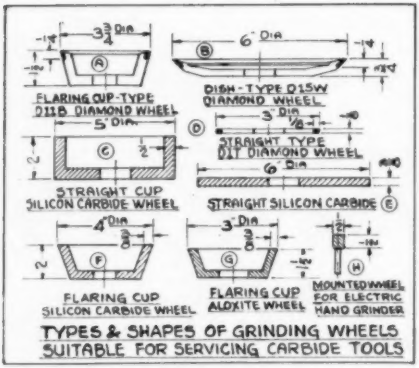

FLARING CUP-TYPE D11B DIAMOND WHEEL
DISH-TYPE D15W DIAMOND WHEEL
STRAIGHT CUP SILICON CARBIDE WHEEL
STRAIGHT TYPE D1T DIAMOND WHEEL
STRAIGHT SILICON CARBIDE
FLARING CUP SILICON CARBIDE WHEEL
FLARING CUP ALOXITE WHEEL
MOUNTED WHEEL FOR ELECTRIC HAND GRINDER
TYPES & SHAPES OF GRINDING WHEELS SUITABLE FOR SERVICING CARBIDE TOOLS

Figure 23

ing of the carbide tip during cooling. Carbide has a very low coefficient of expansion, compared to steel and other metals, and after the braze metal solidifies bonding the carbide and steel together, a high stress is set up during the contraction process in cooling. This problem is of slight consequence in brazing of small blanks, although copper or nickel is often used as a backing material for tool tips. The braze metal is also available in thin sheets, which may be obtained cut to size or can be cut to suit prior to brazing. The small pieces of shim stock are, perhaps, a little more difficult to handle, but they give good results and control of the amount of braze metal when properly applied. Another method of brazing consists of pre-coating the carbide tip with braze metal, before insertion of the tip in the blade seat. This is called pretinning and can be accomplished by melting a little pool of braze metal on top of a cleaned building brick or other such ceramic material. The procedure is the same, except that the tip is coated outside of the blade seat. It is fluxed and brought up to brazing temperature in the pool of metal and after the coating has been accomplished, it is removed and placed in the blade seat. The use of this method merely gives a visible coating to the tip and eliminates the handling of the braze metal during the actual placement of the tip in the blade seat.

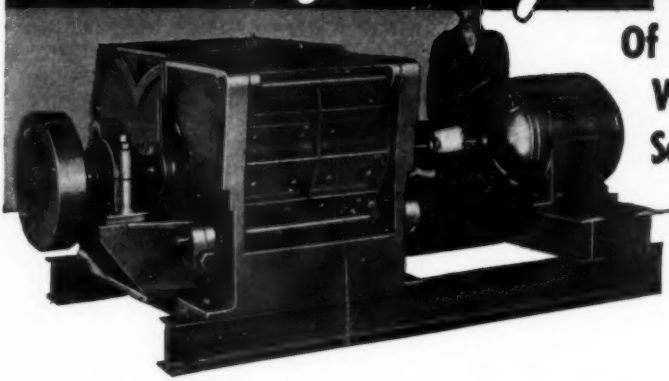
Braze metal is a silver alloy, obtainable in different grades that have various melting temperatures, and a grade most commonly used has a free-flowing temperature of around 1275 degrees F. The flux used in conjunction with the metal should become viscous just prior to the melting point of the metal selected. In selecting a braze metal, one should be chosen that has good filleting qualities, good wetting characteristics with minimum porosity, and high strength.

In the actual brazing operation, a short ice pick will materially aid in holding and guiding the carbide tip while it is being heated, as shown in Figure 8. Immediately after the braze metal becomes viscous, it is a good idea to move the tip slightly in the blade seat as an aid to wetting the tip and blade seat with the braze metal. This action is called "puddling" and helps insure proper coating of the braze surface. Care must be used in making sure that the steel seat and carbide tip are both brought up to correct temperature. If this is not accomplished, a cold braze will result, wherein an efficient bond will not have been accomplished between the carbide and steel. The opposite effect of burning by over heating, will cause an oxidation that will prevent the braze rod from bonding properly.

In brazing carbide tipped saw blades, care should be used in keeping the heat above the gullet line as much as possible. Below the gullet line of the saw blade the steel is endless in direction and the expansion and contraction of the blade body in the brazing operation has an effect on the tension of the blade. After the tips are bonded to the blade body, smithing near the carbide

WILLIAMS "No Nife" Hogs

Save Up To 75% Of The Cost Of Handling Wood Scrap!



Handling and disposal expense of waste wood can be cut as much as 75% by reducing it to chips in a Williams Hog. If handled manually, one man alone can move as much tonnage as three men could handle if scrap is in long strips or awkward shaped pieces. If handled automatically, top efficiency can be obtained only if wood is first reduced to chips.

In chip form, waste wood produces the greatest heat value. Unhogged waste cannot burn evenly because jumbled distribution of small and large pieces restricts air flow, smothers the fire, creates excessive smoke. Hogged wood chips control passage of air for even and complete combustion, yield more BTU's.

Savings in a few months will pay for an automatic installation for conveying wood waste to stoker or boiler.

WILLIAMS LINE IS COMPLETE

• Hogging, Grinding and Shredding Machines • Vibrating Screens • Air and Mechanical Separators • Conveying Systems • Cyclone Collectors • Complete "Packaged" Plants

Write For Complete Brochure

WILLIAMS PATENT CRUSHER & PULVERIZER CO.

808 St. Louis Ave. ★ ★ St. Louis 6, Mo.

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

tips is extremely difficult. Expansion slots are often used to alleviate this condition, particularly in fine-tooth blades.

After brazing, the glassy, hard flux can be removed by soaking the blade in hot water. The braze should then be inspected. A uniform fillet of braze metal should exist between the carbide tip and seat. If excess braze has run into the saw body, this should be removed by careful filing or light grinding. Never use a coarse file or coarse grinding wheel on the blade gullets. The tool marks restrict chip-flow and cause cracking. It is best to polish the gullets with a hand grinder, as shown in Figure 9.

In the facing operation of Step 5, a fine grit diamond lapping wheel should be used for finishing. Figure 10 shows this setup and the fixture. Care should be taken in passing the diamond wheel completely across the face of the carbide, so that a step is neither left in the carbide nor a nick in the gullet. Any such nick should be removed, or it will act as a chip-breaker and may, eventually, cause either the tip or the body to crack. If extreme care is used, a small, flat, circular plate can be notched out to fit around the grinding wheel on the tool and cutter grinder to act as a small horizontal table for the purpose of facing a few teeth. This does save a setup operation, but it is extremely tricky and not recommended, because of the difficulty in maintaining the correct hook and rake angle and squareness of the tooth face.

Step 6 consists of side grinding. Figure 11 illustrates the setup using a cup wheel, and Figure 12 illustrates the setup for blades that have been ground with a straight periphery wheel. Blades should be sharpened on the face and outside diameter and it is important to never grind the sides of the carbide blade, unless it is desired to, (1) change the clearance angles, (2) reduce the width of the blade, providing there is sufficient carbide left to accomplish this without reducing the clearance, or (3) realign the teeth after straightening a damaged blade body. In order to obtain the correct setup of angles on the fixture, first adjust the fixture to the side clearance angle and to the radial clearance angle by eye. Next, color the side of a finish ground tip with a colored wax pencil and bring the tip into the wheel very lightly and observe the amount of the pencil marking removed. Repeat this marking of the tip and, adjusting the fixture until the wheel removes the entire, or almost the entire, pencil mark from the tip. Next, index the blade to bring the finish ground tooth ahead of the one just brazed or the tooth behind the one just brazed up to the grinding position. Touch the diamond wheel to this tooth so lightly that it is barely ticking the tip. There will be no perceptible removal of metal if this touch-off is done correctly. The dials on the machine should then be marked for this zero setting. The blade is then moved out, in position to start the roughing operation.

If there is a great deal of carbide to be removed, a metal-bond diamond wheel of the deep-cutting type can be used to bring the tip down to within, say, .010" of finish size. If a metal-bond wheel is not available or desirable, the roughing operation may be done with a silicon carbide wheel. Gauge 1, shown in Figure 13, can be used advantageously in the setup during the roughing operation and for checking the tip to correct alignment in the finishing operation. The method of using Gauge 1, is illustrated in Figure 11 and also Figure 14. Side grinding may be done with a 150 or 180 grit wheel and finished with a fine grit diamond lapping wheel if desired.

In Step 7, the objective is to sharpen the outside diameter of the blade. One method of setup is shown in Figures 15 and 16, using backing plates under the blade. Another method of supporting the blade is shown in Figure 16, where a rod or finger is brought up snugly under the blade below the tip being ground. The blade should be under slight tension when the rod is used as the supporting member. In order to keep from hitting the steel backing of the tooth which would load a diamond wheel, the first operation is to grind out just enough of the steel behind the carbide tip to allow for roughing and finishing to be accomplished without leaving the finished tip protruding from the body unsupported behind the cutting edge. This operation is shown in Figure 17. A standard 3" cup wheel works well for this operation and the existing back-off angle can be increased slightly to allow the wheel to just miss the back of the carbide tip. A periphery wheel may also be used and the steel backing can be ground at the same angle existing on the blade, by bringing the wheel in just behind the carbide tip. For the best results, do not remove any more of the steel backing than necessary to accomplish the finishing operation; otherwise, the carbide tip will be unsupported.

When it is necessary to rough out a chipped tooth or tips that have been replaced, a silicon carbide wheel should be used to permit the grinding of both the carbide and the steel backing in one operation. The blade is setup to the existing angles of the steel backing and each tooth is cleaned up. Since these wheels wear rapidly, it is necessary to feed the wheel in slightly about every third tooth or so. With experience, the blade can be roughed fairly uniform by this manner of infeeding of the wheel as the grinding progresses around the blade. Silicon carbide wheels can be fed in to the work faster than diamond wheels at a rate found best suited to the particular grade of wheel being used. If a coolant is used on a silicon carbide wheel, the tip should be flooded. Partial quenching will produce "checking" or hairline cracking of the carbide tips.

Although coarse wheels cut faster, it is recommended that a semi-finishing operation be done with a 150 to 180 grit diamond wheel, after roughing, changing the back-off angle about two or three degrees to contact the carbide tip only. A finish grinding operation can then be done with a fine grit lapping wheel at the same blade setting or the angle changed very slightly to avoid hitting the steel backing.

The use of Gauge 2, as illustrated in Figures 13, 15, and 16, can be used advantageously to check the O.D. trueness of the finish ground blade. It is almost essential to use a gauge such as this or a similar indicator setup to be absolutely certain that the tips of an alternating top bevel saw are ground equally, so that one side of the blade does not lead ahead of the other. It is also necessary to have an indicator gauge arrangement to properly grind a combination blade having a raker tooth or any type of blade having tips arranged on more than one diameter.

Maintaining Other Carbide Tipped Tools

Router bits should be sharpened on the face with a fine grit diamond wheel. If the cutting edges are chipped, making it necessary to grind the O.D., the steel backing should be ground and checked to be sure that the clearance of the steel body has not been changed. In replacing tips, the brazing operation is the same as previously described, and the sharpening done with silicon carbide roughing wheels semi-finishing with diamond wheels, and finishing with diamond

lapping wheels. Figure 18 illustrates the use of a grinding jig which will handle router bits having the blades on a helix angle as well as those having the blades located parallel, but in this case the blade would rest on a finger set close to the face of the diamond wheel. In grinding two-flute bits, caution should be exercised in maintaining concentricity of the blades. This will require regular checking of the collets used on the work-head or fixture to be certain they do not become out of round.

Figure 19 shows a setup for grinding shaper knives by use of a magnetic surface plate and Figure 20 illustrates the same operation using a vise. There are several brands of double face tape on the market that are very accurate in thickness and can be used to hold down a shaper knife or other tools during a grinding operation. The tape does not have the holding power of the magnetic surface plate, of course, but if used with care can be used as a means of holding a tool very well. It is very important that shaper knives have the carbide relieved below the steel line on the clamping edges so the shaper collars cannot contact the carbide when they are tightened on the blades.

Figure 21 illustrates a work-head setup for grinding the carbide diameter of a shaper cutter. In grinding helical or angular straight-blade cutters the finger would be rigidly located close to the face of the grinding wheel and

Carter

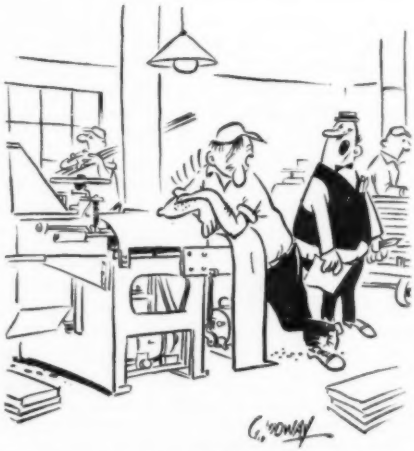
BAND-SAW MACHINE ACCESSORIES

used as standard equipment by leading band-saw manufacturers . . .

- CARTER RIGID BAND-SAW WHEELS
- JIFFY TIRES
- MICRO-GUIDES
- GUIDE-LINE LIGHTS

cut costs way down, improve quality!

CARTER PRODUCTS CO., INC.
423 Wm. Alden Smith Bldg.
30 Ionia Ave., S.W.
GRAND RAPIDS 2, MICHIGAN



"The way you stand there with your eyes closed reminds me of Stone, whose place you took."

TANNEWITZ AUTOMATIC GAUGE
for Swing Saws
SAVES $30 to $50 A MONTH IN LUMBER AND LABOR
30 Days Free Trial
ORDER NOW OR SEND FOR CIRCULAR
TANNEWITZ WORKS

adjusted to give the blade proper clearance.

The cutter clearance gauge, sketched in Figure 22, is a very useful tool with which to pick up and check clearance angles. Proper clearances are extremely important in obtaining maximum performance from any cutting tool. Insufficient clearance will build up tool pressures, causing tool breakage or at least cause the tool to heat and feed hard. Too much clearance will result in rapid dulling, cutting rough and vibration.

The tooth angles charted in Figure 22 should be used as a guide only. Tooth angles and tooth forms should always be maintained to the manufacturer's specifications as accurately as possible.

Figure 23 shows several types and shapes of diamond wheels, silicon carbide wheels and regular grinding wheels that can be used to advantage in the servicing of various carbide tools. The advantage of the diamond wheels having the diamonds on the sides, as indicated in the Type D11B and Type D15W wheels, lies in their longer life, as compared to the type having the diamonds on the face. A metal-bond diamond wheel of the D11B and D.I.T. shapes are very adaptable for roughing work. These wheels should be of the type that can take deep cuts in carbide. When using such wheels, be sure not to force the wheel. Let it feed slowly and freely. The tip and wheel should be flooded with coolant. Plain water will serve very well. The styles of wheels shown in 150 to 180 grit serve extremely well as semi-finishing wheels. In the D11B, it may be found more economical to have the diamonds run to a 1/8" depth on the face, although in the D15W style, 1/16" depth on the face will serve very well. When grinding dry, a diamond wheel hardness of "N" is usually recommended. If coolant is applied by means of a wick, the hardness may be increased to "P", and if amply flooded with coolant the hardness can be increased to "R". The use of coolant will result in better finishes and enable the use of harder wheels, resulting in greater economy in wheel life. These same wheels are available in the same hardness range just given in 320 grit, 400 grit, and 600 grit, for use as finishing and polishing wheels. It is important to operate all grinding wheels at the proper speeds. Diamond wheels, depending on coolant method used, should operate at approximately 5000 surface feet per minute.

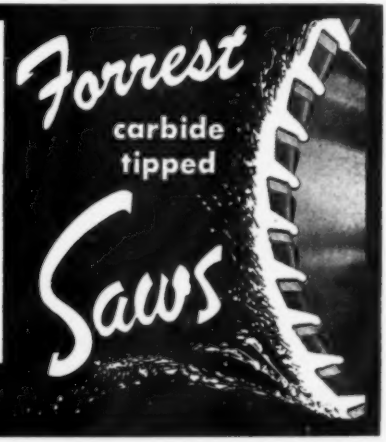
"You can tell a **FORREST** blade by its cut"

Individually designed for each cutting problem.

Guaranteed to perform satisfactorily on the job.

Brochure mailed on request

A. W. FORREST MFG. CO., Inc.
Rutherford New Jersey



$12.90
Postpaid

RUBA
3 WING CARBIDE TIPPED
SHAPER CUTTERS
at an amazing low price!
FOR WOOD • PLASTICS • ALUMINUM
Ruba precision cutters can be used on shaper or drill press . . . for the most specialized job. They last longer, keep edges longer and save resharpening costs.
½" hole - 1¾" diameter
Available in straight and 7° angle.
Specify when ordering
Write for complete circular of our full line of cutters of various shapes available in ½", ⅝", ¾", 1", 1½" arbor holes.

RUDOLF BASS
173 Lafayette St.
New York 13, N.Y.
WA 5-0440

UP PRODUCTION—
Cut Costs!
PLANER KNIVES
MOULDER KNIVES
SHAPER STEEL
JOINTER KNIVES
WITH
Supreme
KNIVES
You step up your production with Supreme Knives . . . milled to exact specifications . . . to insure a perfect fit in the machine. Made from the correct alloy steel for your particular job, Supreme Knives work harder . . . longer. The expense of early re-sharpening and replacing is eliminated.
We design and make Special Knives to your requirements.
WRITE TODAY FOR YOUR COPY OF THE SUPREME CATALOG NO. E
VENEER KNIVES
SHEAR KNIVES
CIRCULAR KNIVES
SEND US YOUR CARBIDE-TIPPED KNIVES CUTTERS ROUTER BITS
We will promptly repair, retip and sharpen your Carbide-Tipped tools and get them back to you without delay. Skilled workmen and precision equipment insure fast service and complete satisfaction in restoring cutting efficiency.
PROMPT DEPENDABLE SERVICE
THE SAW & KNIFE SPECIALTY CO., INC.
8938 CARNEGIE AVENUE • CLEVELAND 3, OHIO

It is important that each diamond wheel should have its own collet. When mounting a new wheel, the wheel should be indicated and shimmed so that it is running straight and true on the collet. If wheels are changed from one collet to another, they will vibrate, wear unevenly, and have a much shorter life.

Flaring cup wheels are advantageous when grinding saw blades and other tools having a large number of teeth. The shape of this wheel permits grinding to be accomplished without interfering with a following tooth. The straight cup wheel is used similarly to the flaring cup, except that it has the advantage of wearing straight back, rather than on an angle, eliminating the necessity of resetting the machine stops to compensate for the wheel wear.

Silicon carbide wheels, often referred to as green grit wheels, due to the color of the bond, are also available in a resinoid plastic bond. For roughing purposes, a 60 grit, "H" or "I" hardness and a porosity number of 12 or over for cooler cutting action will serve quite well. The hardness may be varied by going to softer grades for grinding large carbide surfaces and harder grades for smaller tips. It is best to consult with suppliers on all grinding wheel problems to obtain maximum results for a particular set of conditions.

There are several very good tool and cutter grinding machines on the market. It is important that the wheel head be sturdy and vibration free. The table should be smooth and free in movement and equipped with stops to prevent jamming and breaking a wheel or marring a following tooth. The machine should be selected to permit the operator to have full vision of the tooth and the wheel during the grinding operation. Equipment used in the grinding of carbide tools must be main-

ECONOMICAL
EFFICIENT
VERSATILE

These new Onsrud tools solve many touchy Production Problems. Recommended for wood, plastics and non-ferrous metals. High grade carbon steel body with carbide tips. May be resharpened or retipped at nominal cost. Cutters are staggered on the spindle, forming "steps" which give intermittent cuts, allowing faster feeds, smooth finish, reduced spindle strain. Cutters may be stacked any desired height . . . may be ground with side clearance for slotting, grooving or other operations.

Onsrud

"Better Tools for Industry"

Cutter Manufacturing Co.

801-21 EAST BROADWAY
LIBERTYVILLE • ILLINOIS

tained in top condition. Dials on the machine must be visible, feed screws must be accurate in order to return to a zero setting, wheel spindles must be true, vibration free, and operated at the correct speed. Table ways must be accurate to grind tools concentric, and the motor must be capable of maintaining wheel speed under all grinding conditions. The cost of good equipment will be returned in saving in diamond wheels and grinding time.

With a little experience, the proper grinding of carbide tools becomes as simple in procedure as the grinding of any other type of tool. To be sure, one must use care, be accurate, and thorough. But this is also required in the grinding of any tool. Through better understanding, proper handling, and care, and prompt and correct maintenance, carbide stands ready to serve as the greatest cutting tool development in the history of industry.

ROGER W. BUSHNELL

ARTHUR S. KELLY

JOHN M. COLLINS

BERNARD J. McHUGH

DONALD J. LINNELL

ROBERT H. LOWETH

CHARLES P. FURNESS

V R CARY

FRANK SCHWARZMEIER

ROBERT L. FRENCH

RESOURCES for YOU....

DEPENDABILITY ASSURES *Your* PROFITS

the wood you want, when you want it, in the quantities you want, through your Atlantic Man.

His thorough training and years of experience with Hardwoods is an essential part of your service wherever you are or whatever you manufacture, but that is not all.

Behind your Atlantic Man must be a never ending source of supply and the vast resources for continual processing and prompt delivery.

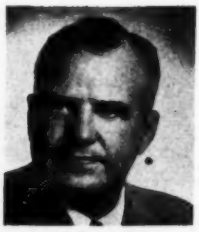
Through the combined efforts and composite reporting of these men, serving you in your territory, that story, so important to you as a user, will be told in your trade publications and through your Atlantic Log in the months to come.

Watch for interesting facts and information on Hardwood resources always helpful to you.

THE ATLANTIC LUMBER CO.

88 BROAD STREET, BOSTON, MASS. 1055 SENECA ST., BUFFALO, N. Y.

RALPH H. SHEPARD



J. R. JELLEME
Vice-President in charge of Sales

F. G. GILLESPIE
Domestic & Foreign Sales

CHARLES M. CURTISS
Vice-President – Sales

The CHICAGO MARKET

By E. McDaniel

NOW they've added psychology! For years furniture manufacturers have appealed to the eye and the pocketbook of the prospective buyer. However, one of the features of the Chicago Market was the report of a study on motivation made by Weiss & Geller. The results of the extensive study made by a team of psychological researchers show some interesting results.

Many explanations have been advanced during the past few years for the obvious deep and significant postwar changes in attitude of the American family toward home. The postwar period; TV; the emotional impact of homelessness abroad have all been considered factors. But whatever the cause, the effect was evident. From a prewar nation apparently seeking to escape from home, we have become a nation of homebodies. The psychological researchers came up with these facts: 1) for women the home has again become the most important measure of her status in society; 2) today's husband sees the home as a new and necessary outlet for some of his deepest creative drives; 3) to children the home has become the symbol of security.

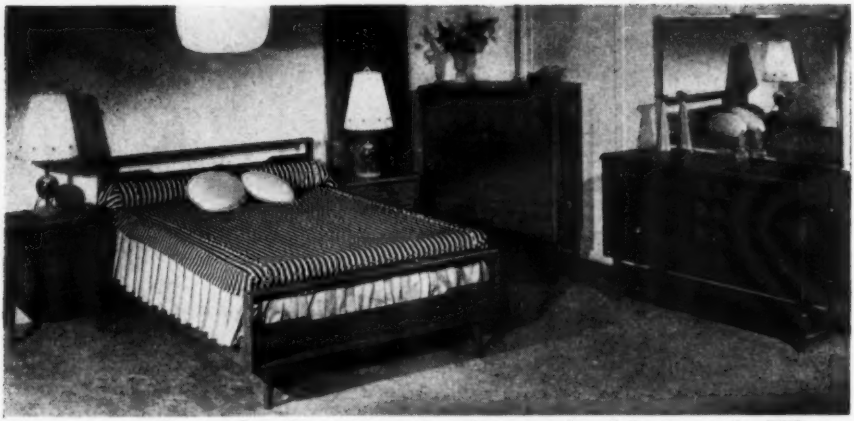
The researchers continued by saying that "Today, more than ever, the home is the woman and the woman is the home." The matter of desire for newness and for change plays a big part in woman's interest in the home.

At present the man is free to take a greater interest in the furnishing and equipping of the home than he has been for many generations. Basic in every man is a creative interest in his surroundings; previously this has often been considered unmanly or feminine. To the man, his home is his refuge. Therefore, to the man, appeal lies in durability and construction, more than economy or design.

Results of research with children indicate the importance of home security to the child. In their play, there is a growing tendency among children to imitate home living.

Conclusion of this report states that: "In understanding and satisfying these emotional needs, it may well be that manufacturers and retailers of home furnishings may find both expanded market and the opportunity for greater service."

Frank S. Whiting, vice-president of the American Furniture Mart, stresses several points as answers to the question "Will it sell?" First, most furniture purchased today is for the "replacement market." It must fit in with other pieces. Then, while architecture today is dominantly contemporary, many background changes would be required to place the radical new designs in a proper setting. Thirdly, the public demands a broad selection. When it sees a whole assortment going in a given direction, it concludes that this is a true and legitimate trend, not a fad. Furniture costs too much to be purely



These pieces follow a Scandinavian trend and are made of butternut by Tillotson Furniture Company, Jamestown, N.Y.

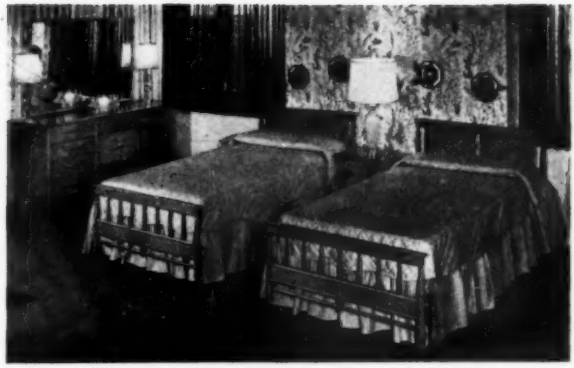
decorative and all successful design must include: function, effective use of materials and economy of production.

Attendance at the close of the market had reached 23,843 and was some several hundred ahead of the '54 show. Many manufacturers told us that this was the best peacetime market they had experienced. It was also interesting to discover that the second week of the market was the best second week on record. Business continued brisk throughout the entire two-week period.

In complete contrast to the uneasy feeling which prevailed at the winter market last year when the country was in the grip of a recession, this year's market offered two principal qualities —confidence and optimism. Business booked varied with individual firms from 5% to 50% ahead of last year with very few manufacturers finding orders below a year ago. Forecasters predict that installment buying will enable many people to buy more home furnishings than ever before.

The past 12 months have been spent in

"Daniska Modern" dining room designed by Salvatore Bevelacqua. The Tillotson Furniture Co., Jamestown, N.Y., offered these pieces in butternut with hand carved cabinet fronts.



First contemporary furniture by a modernist of the old school, the H. T. Cushman Mfg. Co. offered this suite. The pieces are made of Northern yellow birch and combine sturdy proportions and delicacy of line.

putting the house in order and have given retailers an opportunity to adjust their inventories. As a result of this adjustment period, there seemed to be a new attitude on the part of dealers and a great deal of enthusiasm. The dealers themselves had a new feeling of confidence in the business outlook.

Delivery dates are lengthening; factories in many instances are swinging into accelerated production and everyone seems happy with the 1955 outlook for the furniture industry.

Style News

Perhaps most significant at this market is the good taste seen in almost all of the exhibits. It is an approach that has embraced all price brackets and it means that the average buyer finds what the buying public is looking for at popular, moderate, custom and specialized levels.

Color has gained momentum in this market until it has become the dominant influence in a large number of exhibits. Bedroom furniture introduced Chinese red. Blues, in qualities from peacock to purple, were seen in upholstered and case goods. Rich tropical woods and two-tone combinations were popular. The 1955 look reveals more brass, aluminum, fabulous variations of plastic and wrought iron.

Case Goods

Bedroom and dining room manufacturers came forth with more color than ever before. Pastels, with emphasis on pink, clear blue, green, turquoise and bright red, all could be seen at this market. At the same time the tawny beige-and-brown tones held their own, with mellow caramel, honey and butternut finishes being seen. Italian and Danish influences were felt in design and a strong feeling for Oriental.

In hardware, pewter, chrome and white porcelain gave brass some competition. There also was a generous sprinkling of copper. Another feature was that the tops of pieces were often plastic, making for easier cleaning.

Interesting things have been done with triple dressers: extra deep drawers in the center; bowed fronts, serpentine effects and other concave-convex treatments; built-in features, such as partitioned compartments, storage chests and pin trays.

Tables

Table manufacturers also responded to the "call of color" in some lines. Most striking, however, were the beautiful combinations of wood and of finishes. Consider H. Willett showed some interesting saki tables only 6" from the floor. New end tables had a shelf which pulled out for a portable serving tray.

Captain's bunk is made in hard-rock maple by Crawford. This bed combines snug comfort with storage space.

The old-fashioned oval or circular dining room table came back in modern design and found favor in kitchen numbers also.

A new development in the expandable dining room furniture was a table 65" long which rolled out from a breakfront or server-type unit. Plastic was widely used for table surfaces. Brass ferrules on tapered legs gave a good clean, light line to many tables.

Unfinished Furniture

Unfinished furniture continues to be in constant demand—popularized by the "do it yourself" trend—and there was more variety than ever this year. Pieces shown included stack and combination desk-and-drawer and table-and-drawer pieces. Color has even reached this market and manufacturers have provided buyers with samples in various finishes. One manufacturer introduced a combination of pine and wrought iron in a dinette set. Unfinished room dividers have reached a peak in popularity.

Juvenile Furniture

With the baby population constantly soaring, there has been tremendous interest in all juvenile lines. Two other factors are the increase in home building and the attitude of the family to the importance of the home.

ANOTHER NEW APPLICATION OF

POWER-LINE STAPLERS

Butt-joining dinette furniture frames on Stand using Power-Line AS-4 Stapler and No. 3 Chisel Point Staples.

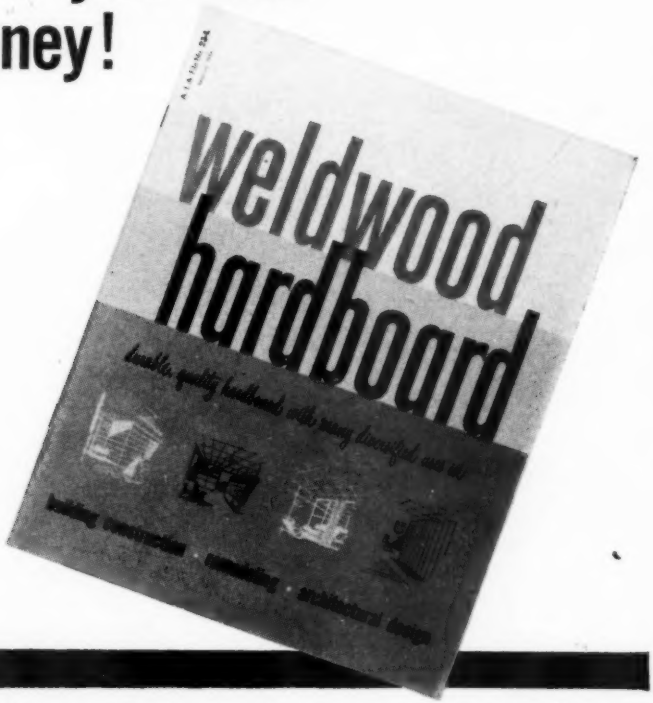
Stand is fully adjustable from ½" up to 23". Ideal for any application that is portable as it leaves both of operator's hands free.

Can also be used for butt-joining core stock and for assembling dinette chair backs. (One manufacturer reports that he can now turn out 120 dinette chairs per hour).

Write for new catalog.

POWERS WIRE PRODUCTS COMPANY
540 S. Monterey Pass Road
Monterey Park, Calif.
Branch plants at Monroe, Mich. and High Point, N. C.
Sales Representatives:
Chicago — Memphis — New York — Detroit
San Francisco — St. Louis — Boston

This hardboard book can save you time and money!



Stop hunting through old papers and files for bits and pieces of information on hardboard! This Weldwood booklet gives answers to questions like:

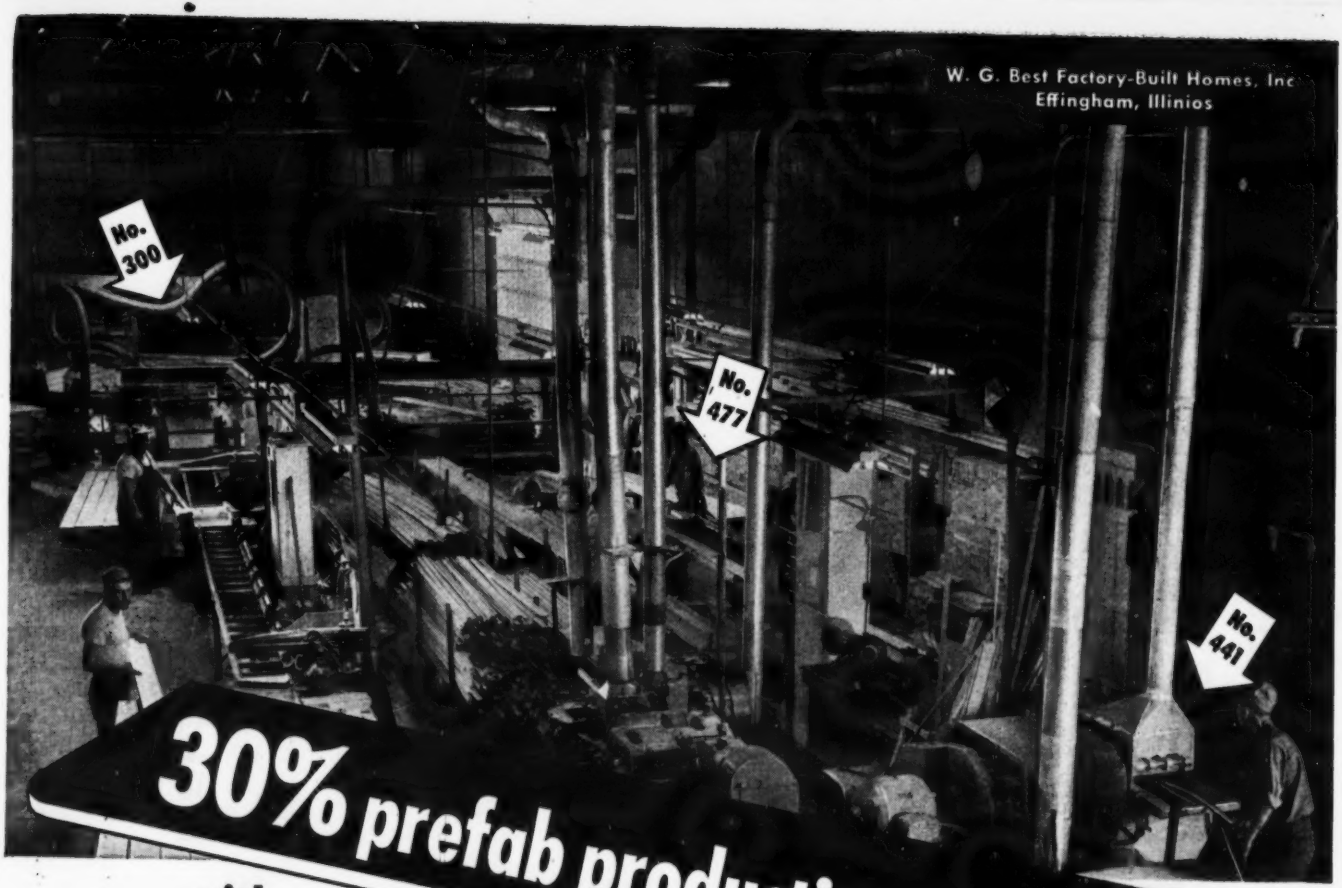
How many kinds of Weldwood Hardboard are there? Is there a standard hardboard thicker than ¼"? What's the average caliper of ⅛" tempered Hardboard? How do I condition Hardboard? What is the minimum bending radius of 3/16" standard stock?

The booklet is free—send the coupon today for your copy. The previous edition went fast, so don't delay.

Weldwood®
HARDBOARD
A product of
UNITED STATES PLYWOOD CORPORATION
World's Largest Plywood Organization

UNITED STATES PLYWOOD CORPORATION
55 West 44th Street, New York 36, New York
I would like very much to have a copy of your Weldwood Hardboard booklet. WD-2-55

NAME.....
ADDRESS.....
CITY.....**STATE**.....



30% prefab production increase

with MEREEN-JOHNSON MACHINES

Production of 10-homes-per-shift has been reached at the Effingham, Illinois

MEREEN-JOHNSON MACHINES

30% production increase

Production of 10-homes-per-shift has been reached at the Effingham, Illinois plant of W. G. Best Factory-Built Homes, Inc. This figure represents a 30% increase over previous production and was brought about by installing several new machines and by adding production and storage space to its year-old plant. Attractive mainstays of the Best line are its three-bedroom homes with attached single or double garages. Prices of these Best-built homes range from $12,000 to $15,000.

Contributing to new output levels at the W. G. Best plant is a Mereen-Johnson No. 300 Double-End Cut-Off Saw with the complete versatility to perform many tasks in the prefab factory. Capable of handling stock up to 16 feet long, it cuts studs and notches purlins, rafters, and joists. In fact, the No. 300 handles up to 50 rafters per minute! The No. 300 is also used to size doors and picture-window sash—a carload of doors can be sized and beveled in eight hours.

This oversized Double-End Cut-Off Saw was specially built by Mereen-Johnson for the Best Co. operation. Equipment includes cope motors, stationary dado arbor, center chain beams and other special attachments to meet the specific production problems. Variable speed feed drive uses smooth running high-speed feed chains with easily respaced snap feed dogs. *The standard unit is fully described in M-J Bulletin No. 300.*

The Best factory uses an M-J No. 441 Gang Rip Saw for high-speed cutting of stock to various dimensions. Variable speed drive and six power-driven feed rollers assure positive feed at rates up to 300 feet per minute. Precision construction techniques maintain glue joint accuracy. *Complete details are available in Bulletin No. 441.*

Best also uses an M-J No. 477 Cut-Off Saw for fast cutting operations on short lengths of dimension stock. The No. 477 is an amazingly efficient and accurate saw developed for quantity production. Tumbler type saw mounting and fast feed increase the No. 477's output so that it does the work of several machines. *Bulletin No. 477 describes the unit fully.*

MEREEN-JOHNSON MACHINE CO.

4401 LYNDALE AVE. NO. • MINNEAPOLIS 12, MINNESOTA

CUT-OFF SAWS	DOUBLE CUT-OFF SAWS	MULTIPLE CUT-OFF SAWS	GANG RIP SAWS
TENONERS	VENEER & PLYWOOD SIZERS & JOINTERS		RESAWS

No. 300 Double Cut-Off Saw with copes and dado arbor. Cuts rafters and studs, trims doors, etc.

No. 477 Automatic Cut-Off Saw in line feeding to No. 441 Gang Rip Saw by conveyor.

Rattan was used in a "flying saucer" juvenile chair, guaranteed to hold 200 lbs. Another outstanding feature at this market was the success of a new Add-A-Piece group, starting with the crib, sliding door wardrobe and two and three drawer chest in eggshell, green or gray Plextone finish.

One of the newest in the playpen field was a play yard with red lacquer floor and finished to be used indoors or out.

A Tour Through The Market

Obviously it is impossible from the standpoint of space, or reporter-endurance to cover every exhibit. In the succeeding paragraphs we have selected those displays which were typical or emphasized some of the new trends.

The Peerless Furniture Co., Shippensburg, Pa., made news with dramatic tables in all white or black and white with brass trim. Four table groups of modern design and featuring limed oak, limed oak and black, mahogany and walnut finishes were exhibited by A. Laun Co., Kiel, Wis.

H. T. Cushman, North Bennington, Vt., had added a northern yellow birch with a warm birch finish in modern

Buffet from beautiful new Trans-East solid cherry collection of Consider H. Willet. The brown cherry finish is combined with pewter on heavy brass pulls and ferrules.

Lebanite
TRADE MARK
THE *Aristocrat* of all HARDBOARDS

You can—
Saw IT
Drill IT
or Punch IT

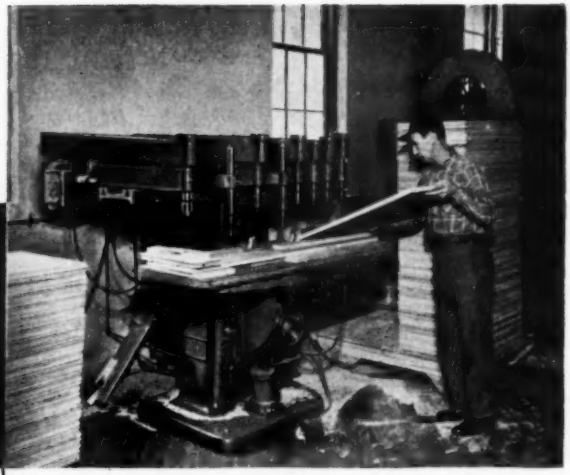
1 It looks like wood
2 It can be painted, varnished,—will accept the modern finishes equally well
3 It can be worked on regular tools
4 Its strength is equal to or better than wood
5 It has outstanding smoothness on both sides
6 Its edges will finish smooth without danger of chipping, flaking or delaminating

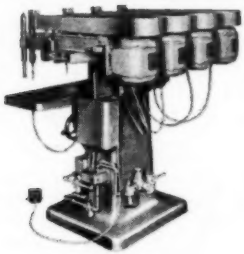
Write Today for Full particulars and specifications

WESLEY K. SWIFT ASSOCIATES
1630 5th Ave MOLINE, ILLINOIS

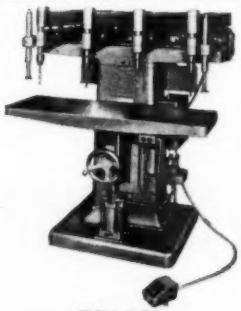
ECCO

No. 448





REAR VIEW



FRONT VIEW

EKSTROM, CARLSON MULTIPLE-SPINDLE

BORER

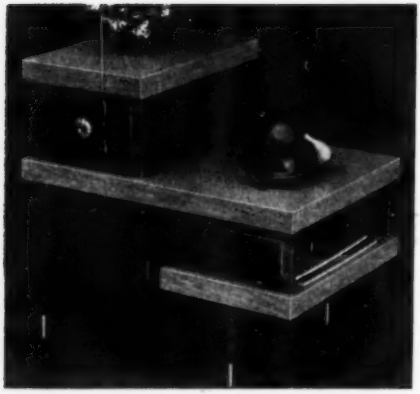
The big advantages of this machine are: Versatility, Easy Adjustment, Rigidity, Accuracy, High Production Efficiency, and Automatic Table Feed Cycle. Standard machine has four spindles and two spring hold-downs, each positionable forward, backward, or sideways as desired on two T-slot rails. Individual belted motor drive on each spindle can be turned on or left idle independently as needed. Machine can be set up for single or series operations, as shown in picture above. Also available with more spindles, two-spindle cluster heads, larger tables, longer mounting rails. Spindles in sleeve-bearing cluster heads can be furnished with as close as 5/8" center-to-center distance, while 1-1/8" is the minimum using ball bearings. Write for quotation, or see your ECCo representative.

CONDENSED SPECIFICATIONS

Spindle Motor Horsepower	1
Spindle RPM	3600
Work Table Size	16" x 48"
Minimum Center Distance between Spindles	2-1/2"
Spindle Chuck Capacity	0" to 1/2"
Maximum Clearance between Table and Chuck	10"
Adjustment of Spindle Arms (Front to Back)	14-3/8"
Vertical Knee Adjustment	6"
Maximum Table Stroke	4"
Adjustable Table Dwell (Loading Position)	3/10 to 60 seconds

EKSTROM, CARLSON & COMPANY
1411 RAILROAD AVENUE, ROCKFORD, ILLINOIS

ECCO



Contrasting finishes are used in this table by Bernard-Murray Industries. The dark wood is solid walnut and is combined with a light plastic. Brass ferrules complete the tapering legs. This is a dramatic example of the new trend to combining light and dark finishes.

design to make up a new contemporary line of bedroom, dining room and occasional pieces. The "Captain's bunk" was a new item with the Crawford Co., Jamestown, N.Y. "Ad-A-Cabinet" was offered by the Tell City Furniture Co., Tell City, Ind., and included bases and tops, units for three sizes of records and for sheet music.

Five new bedroom groups were shown by Johnson-Carper, Roanoke, Va. These were constructed of flat cut African mahogany solids and veneers and came in charcoal, Tiffany grey, cinnamon, faun, sable, ice pink and turquoise. Sun Glow, Chicago, offered trundle beds to match all of their bedroom groupings.

Heywood-Wakefield showed a new sable grey master bedroom grouping in solid northern birch. This set had a crisp high style with a feeling of spaciousness. Brass pulls with enamel fronts were an interesting detail. This company also showed a sable grey breakfront with cane front, custom-designed woven cane front doors.

The Sumter Cabinet Co., Sumter, S.C., introduced two bedroom suites with stain-proof finishes in pastel pink and gray-blue. The Mengel company used plastic tops extensively in their bedroom groupings. Bedroom suites in jade green and cobra were introduced by Basic-Witz.

The "Cadillac" of the moderate price groups of moderns was displayed by Sieling Modern, Railroad, Pa. These bedroom suites were of black and gold. One piece showed had 14-karat gold hardware!

A "first" for Lee Furniture Mfg. Co. was the decision to make all its limed oak and silver fox dining room pieces so that they are interchangeable and can be made up into a wide variety of groupings.

Conclusion

At least 80%, and possibly more, of the average furniture store's business comes from the people who are making

An OBP Cyclone Collector identifies your plant as a clean place to work —all dust, dirt and manufacturing wastes completely removed.

CHECK YOUR PLANT AND STOP THESE LOSSES

Dust, dirt and manufacturing wastes cut your profits. Dirt-clogged machines break down. Dust-laden air affects workers' health. Piles of chips, cuttings, dust create fire hazards. Modernize your plant with an OBP pneumatic system designed exactly to your needs. We engineer, manufacture and install the complete job.

OHIO BLOW PIPE CO.
WE HANDLE THE COMPLETE JOB
ENGINEERING · MANUFACTURING · INSTALLING

1717 DOAN AVENUE,
CLEVELAND 12, OHIO

less than $90 per week. This information, plus the other factors which have been mentioned in this article should be the basis for furniture design and manufacture. Business will be good in 1955 according to everyone we questioned at the market, but everyone agrees that this statement must be qualified.

It will be a year of competitive selling and salesmanship is needed. We know more about the psychological attitude toward home life and should be able to use this information to advantage. Obviously, we are aware of the increase in population; the influence of TV and other factors which are promoting home life.

This information used wisely should help the furniture industry "Give the lady what she wants," and thereby have a record year during 1955.

yours free

how to cut your costs with upson wood fiber panels and cut-outs

Send for FREE sample kit today. Discover how to cut costs, speed output with rugged, low cost Upson Wood Fiber parts and cut-outs.

You save because Upson will cut parts to fit your exact needs. And Upson's special equipment can apply low cost coatings for protection, color, waterproofing. Let Upson, as a specialist, combine operations and lower costs even more.

UPSON

upson LAMINATED WOOD FIBER BOARD AND SPECIALTIES

Handsomely packaged kit with 11 samples of cost cutting Upson Wood Fiber Panels plus 8-page folder. Yours FREE. Mail coupon.

THE UPSON COMPANY 9122 UPSON POINT, LOCKPORT, N.Y.

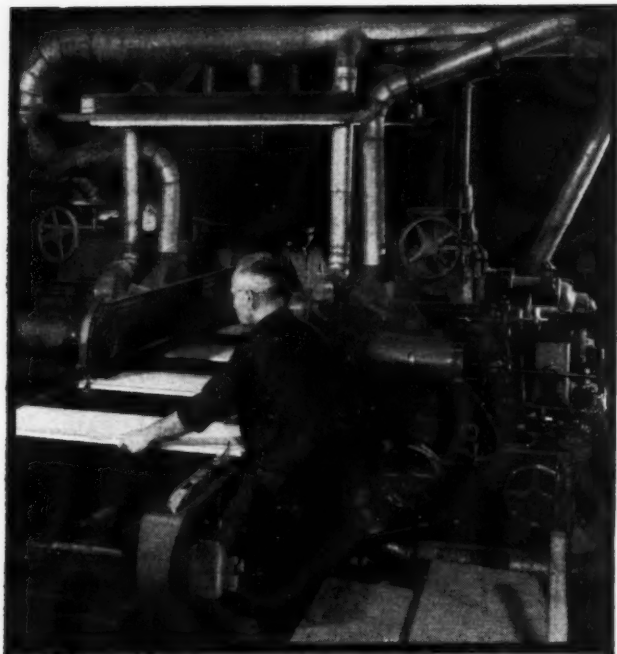
Please send me FREE sample kit.

NAME_____

COMPANY_____

STREET_____

CITY_____ STATE_____



"WOODWORKING PLANT IN ITSELF"

Greenlee Double-End Tenoner cuts costs fast

Many manufacturers have increased production, refined the quality of their products, and reduced unit costs substantially with a GREENLEE No. 545 Double-End Tenoner. This versatile machine performs many cost-cutting operations. It holds exact sizes over long production runs, thus eliminating costly "hand fitting" methods. Often referred to as "a woodworking plant in itself," it takes the place of several single-purpose machines and results in a highly streamlined, efficient production flow that produces finer products . . . in less time . . . at less cost . . . to meet today's market demands.

Write for Bulletin No. 545 GREENLEE BROS. & CO.
1862 Twentieth Avenue, Rockford, Illinois

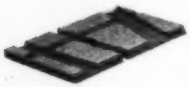
TYPICAL EXAMPLES OF WORK PRODUCED ON THE GREENLEE NO. 545 DOUBLE-END TENONER

Dadoing, scoring, dovetailing, notching, relishing, sillhorning, and irregular shaping are among the 15 separate operations performed.

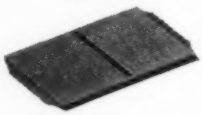
Mitering furniture rails

Dovetail jointing furniture rails

Cutting lock corner joints



Dadoing window frame stiles



Blind dadoing and relishing panels

Beveling and cutting clamp nail grooves

Sizing, tenoning, and coping door rails

GREENLEE

Evolution of LUMBER DRYING TECHNIQUES and DRY KILNS

Part 15

By Paul H. Graham

UNTIL the early 1900's about the only instrument available for measuring dry kiln performance was the glass-stemmed thermometer used to measure kiln temperature. It was a simple visual indicating thermometer made of a glass tube of small bore fastened to a lower tube that was usually filled with mercury.

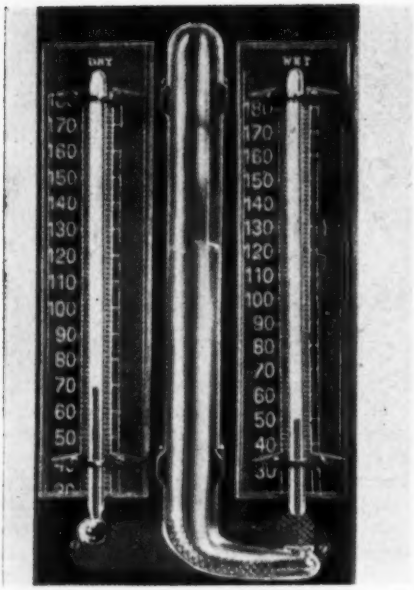
The thermometer was usually hung inside the kiln to measure temperature but since the operator could seldom stand a temperature much more than 120 degrees F., it had to be taken outside for reading in cooler air. Naturally, all temperature readings obtained in this manner were not a true measurement of the inside kiln temperature.

Later on, the thermometer was hung in a recess cut in the kiln door behind glass to permit reading from the outside without opening the door. The temperature showed by the thermometer in this location was usually lower than that actually prevailing within the kiln chamber.

Inaccurate kiln temperature measurements thus obtained finally led to the use of maximum-reading thermometers, similar in construction and operation to conventional medical clinical thermometers, which held the maximum temperature registration for accurate reading outside the kiln. Various methods were used to obtain temperature readings inside the kiln with this thermometer. A practice favored by many operators involved the lowering of the maximum-reading thermometer down into the kiln through vent openings to measure temperatures in various parts of the kiln. This method at best was rather difficult and time-consuming.

Industrial-type thermometers were later adapted for use in measuring dry kiln temperatures. Thermometers of this type usually consisted of a brass extension tube surrounding the stem and part of the bulb, with a protective brass casing and a glass face over the scale. Available in lengths of 3' or more, the extension tubes could be inserted through the kiln wall, with the heat-sensitive bulbs on the inside in contact with the heated air of the kiln, and the case outside to permit the indicated temperature to be read on the scale. Since the stem could be fitted on at practically any desired angle, the scale could be vertically mounted with a right-angle stem to permit easy reading when the extension tube was inserted horizontal through the kiln wall.

Although not used too extensively by commerical kilns of its period of introduction, an electrical-resistance thermometer system was developed which like the modern method of measuring



Early hygrometer composed of wet-bulb and dry-bulb thermometers mounted on metal frame was used portably to measure kiln temperature and humidity.

temperature variations in a dry kiln by means of a potentiometer and thermocouples, used a change in electrical properties as a means of temperature measurement.

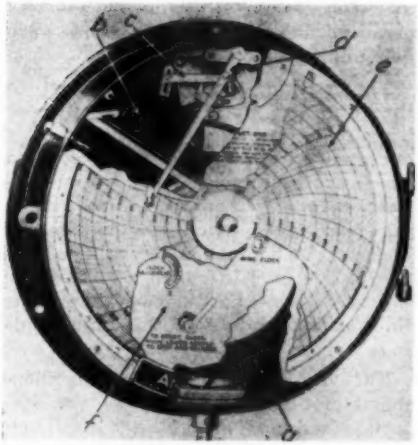
It featured a coil or spiral of wire whose electrical resistance changed with changes in temperature. This resistance coil was the "bulb" and was wired to an indicator inside the kiln. Temperature was indicated by a pointer on a visual dial, and temperatures at a number of places in the kiln could be read from one instrument, using a number of bulbs and suitable switches.

Growing realization of the influence of relative humidity upon kiln drying led to the development of the wet-and-dry-bulb hygrometer, wet-and-dry-bulb thermometer, or pscychrometer as a means for accurately determining both temperature and relative humidity. Although these instruments varied somewhat in their individual modifications, the basic instrument was made by attaching two thermometers of the same kind and calibration to a suitable supporting frame, one, the wet-bulb being kept moist by means of a surrounding wick kept dipped in a cistern of water.

This instrument depended upon the evaporation of water from the wick to cool the bulb. The dry-bulb thermometer registered the actual kiln air temperature and the wet-bulb the air temperature minus the amount of cooling. The principle of operation was the same as in modern instruments of this type; the lower temperature reading of the wet-bulb is in proportion to the evaporation of the wet surface of the cloth wick and this depression is a measure of the humidity of the air.

In the use of these instruments it was recommended that they be placed inside the kiln in a good circulation of air, or if this was not possible, that the

Hygrodeik, form of hygrometer developed for determining relative humidity in kiln to permit readings to be taken direct from instrument without use of separate relative humidity charts.



Courtesy Forest Products Laboratory

Extension-tube recording thermometer.

instrument be fanned to induce circulation and evaporation. The instruments were usually hung along the kiln wall, in fresh air ducts, or half-way up the height of the lumber piles. Instructions provided by the manufacturer stated that at lower temperatures, up to 120 degrees F., a minimum air rate of 15 feet per second was required, less at higher temperatures.

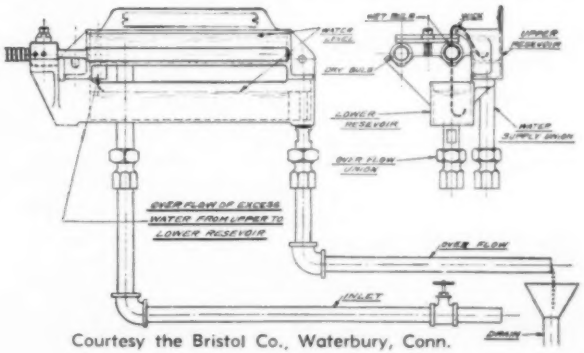
Most of the early wet-and-dry-bulb instruments were used in the kiln portably and presented problems in accurate reading similar to those experienced with indicating thermometers. This eventually led to the use of maximum-reading wet-and-dry-bulb thermometers which could be removed from the kiln for reading in cooler areas without change in registration of temperature.

Sling psychrometers were also used to measure relative humidity consisting of two like thermometers fastened to a handle so that the entire instrument could be whirled in the hand to produce an air current sufficient to produce a maximum lowering of the wet-bulb.

Subsequent development of the extension-tube type of thermometer resulted in the recording thermometer which filled the obvious need for recording temperatures throughout the kiln run. These instruments later provided the means for the development of modern recorder-controller systems now employed for controlled dry kiln operation to eliminate need for manual adjustment.

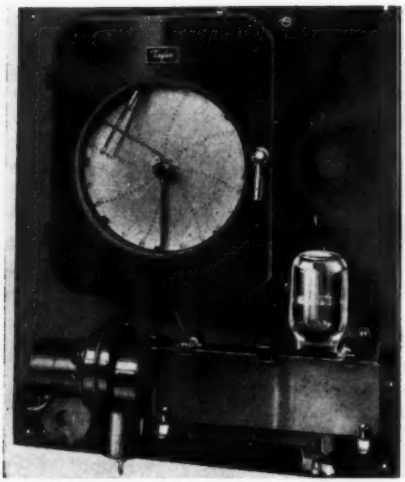
Although the principle of temperature measurement remained substantially the same, mercury-filled glass-tube thermometers were generally replaced with metallic bulbs filled with mercury (or other suitable liquids), gas or vapor.

The sensitive pressure bulb was usually connected by a capillary tube, often protected by flexible armor, to the recorder which contained an actuating mechanism reactive to changes in



Schematic layout of wet-and-dry-bulb recording thermometer system with continuous flow type reservoir consisting of upper and lower reservoirs.

Courtesy the Bristol Co., Waterbury, Conn.



Courtesy Taylor Instrument Co., Rochester, N. Y.

Installed outside kiln, recorder-thermometer records wet-and-dry-bulb conditions inside kiln from samples of air drawn in through fan inlet in panel across-wet-and-dry-bulbs at velocity of about 600 f.p.m.

pressure. Changes in internal pressure produced movement that was transmitted through a lever system and linkage to step up the movement of the actuating mechanism to the pen arm which moved across a slowly revolving chart to mark a line on the recording chart to accurately record the temperature in the kiln. In the earlier instruments a chart mechanism was provided to hold and revolve the chart at a fixed speed and a clock movement which had to be wound.

Many of these early recorder thermometers carried 1-day or 7-day charts, about 6" in diameter and graduated to show a temperature range from about 75 to 200 degrees. The dial and clock were located in a convenient place outside of the kiln, and the bulb inside, connection being made with a long capillary connecting tube protected by a flexible armored tube. The chart case was usually hinged at the top and was arranged to stay open while charts were being changed.

The marking pen was arranged to lift from the chart in some of these instruments by an automatic pen lifter operated by the door. To provide a check on the human element, some instruments were equipped with a time punch designed to be operated by the operator as he took his readings. This device operated to punch a hole in the border of the chart opposite the time limit corresponding to the time readings were made.

The various types of recording thermometers differed mainly in the material used for filling the bulb. Their choice was primarily determined by operating conditions and degree of accuracy required. Similar elements are currently incorporated into modern recorder-controllers.

The liquid-filled type was usually filled with mercury (or other suitable fill material) that would exert pressure by expansion of liquid in the system This type of recording thermometer generally had temperature readings on the chart with almost exactly duplicated graduations. Its chief weakness was that changes in temperature along the tubing or about the case could produce an error in temperature reading.

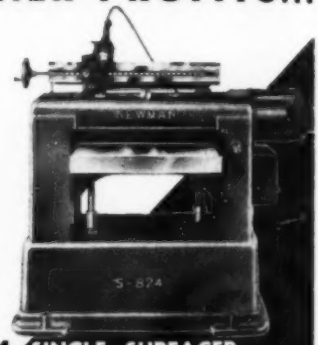
As stated by an instrument manufacturer, "The amount of error is governed by the ratio between the volume of mercury contained in the tubing and the volume of mercury contained in the bulb, hence the maximum length of connecting tube for the conventional mercury-actuated instrument is limited to 25 feet in conventional application, or 35 feet under favorable conditions."

The mercury contained in the spring capsule was also affected by changes in temperature surrounding the case. Modern instrument makers claim to have corrected this condition with a bimetallic head or "case" compensator

IF YOU WANT BETTER FINISH...
LESS WASTE... MORE ACCURACY...
HIGHER PROFITS...

You'll want NEWMAN MACHINES

Geared to YOUR production

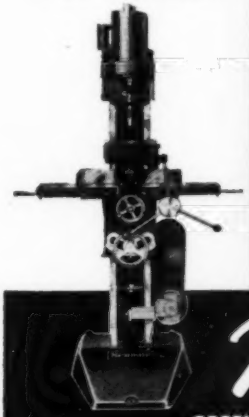


S—824 SINGLE SURFACER

K-16 VARIETY SAW

G-232 HYDRAULIC KNIFE GRINDER

T-20 MORTISER



The machines shown here are but a few of those manufactured in our big new modern plant which turns out a full line of up-to-the-minute woodworking machinery. Our staff of design engineers constantly seek newer, finer techniques and quality controls. All moving parts — shafts, pulleys, heads are dynetrically balanced for smooth vibration-free service and long productive life. Full details of any Newman Machine is yours on request.

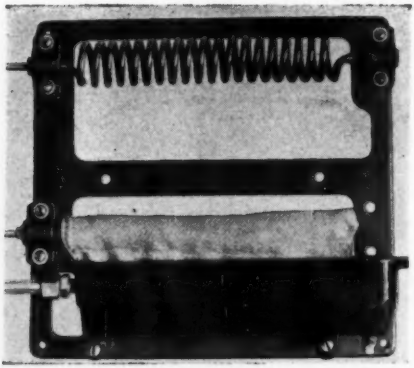
— — Write today — —

Remember you'll always get more profit dollars from Newman Machines — — Geared to your production.

G-16 PEDESTAL TYPE HEAD GRINDER

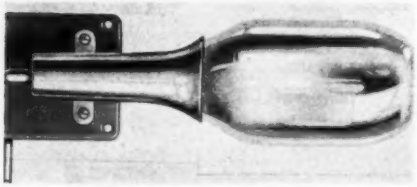
Newman MACHINE CO., INC.

GREENSBORO, NORTH CAROLINA, U. S. A.



Courtesy Taylor Instrument Co., Rochester, N. Y.

Wet-bulb-dry-bulb and cistern arrangement for bottle and cistern water feed.



Bottle used in this arrangement. Here shown in sidewise position.

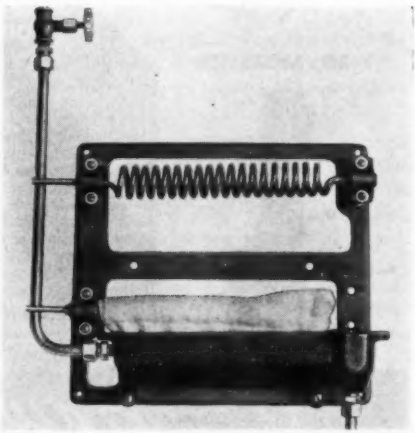
in the linkage to permit mercury instruments to be used with tube lengths up to 250 feet.

In the compensated construction the regular mercury-filled capillary tube is paralleled by a casing containing nitrogen gas. This gas-filled space is said to operate in the manner of a long bulb, equal in length to the total length of the connecting tube, which inflates and deflates a capsular spring inside the recorder case with temperature fluctuations along the tubing. The capsular spring operates in turn through a calibrated lever movement to shift the center of the spring capsule in the proper direction to make the required stem correction to compensate the effect of varying temperatures on the connecting tubing.

Mercury provides powerful actuation, is a good sensitive medium for accurate measurement of temperature, and has a range of minus 40 degrees to plus 1000 degrees F., In chart recording it generally gives identical control sensitivity throughout the whole range.

Gas-filled recording thermometers had their system actuated by expansion and contraction of gas. The tube system used an inert gas for filling and operated on the principle of the Charles Law —in a constant volume of gas, the pressure varies directly as the absolute temperature. These gas-filled thermometers were found to be best suited for higher temperature ranges, or where a slower response to temperature changes was not important.

The bulb, connecting tube and spring capsule were filled with an inert gas under pressure. As the temperature of the bulb increased or decreased, pressure of the gas increased or decreased in direct proportion. Because the temperature along the connecting tubing varied with atmospheric and other changes, it was required to maintain a volume of gas in the bulb considerably



Courtesy Taylor Instrument Co., Rochester, N. Y.

Wet-and-dry-bulb and reservoir arrangement for continuous-flow water system.

SPEED with the POWER PLANER

No. 380
and 380A
PLANER

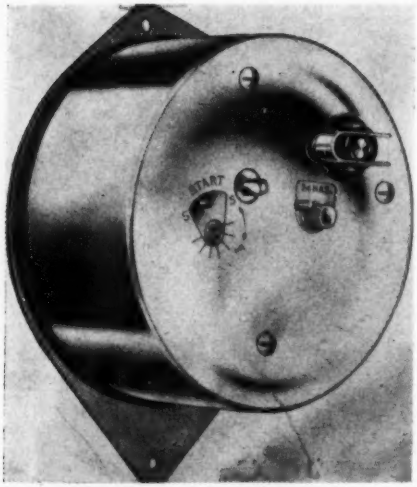
FLEXIBLE CONTROL OF SPEED

is only one of the many features that places the POWER Planer far and ahead the most desired planer in the industry. For a very good reason experienced woodworkers prefer POWER Planers for the more particular and exacting jobs. For eighty six years, thousands of Planers have been produced of all types: roll feed, endless bed feeds, single, double and four side machines, dimension planers, deck planers etc. There is no substitute for experience in the development of precision Planers. Write today for full information on this latest Model POWER Planer.

HIGHEST QUALITY SINCE 1867

Planers - Tenoners - Planers & Matchers
Resaws - Band Saws - Power Feed Rip Saws

L. POWER & CO.
2823 Oakford St.
Philadelphia, Pa.
Manufacturers of POWER Machinery Since 1867



Courtesy the Bristol Co., Waterbury, Conn.

Spring-propelled chart drive mechanism.

greater than the volume in the tube to prevent temperature changes along the tube from affecting the accuracy of the instrument.

The vapor-filled recording thermometer was not popularly used for kiln work, due to its freedom from effect of temperature variation along the tube and case. In its closed system vapor pressure was developed corresponding to the free surface of the volatile liquid used for filling, regardless of temperature existing at other points of the system, if the bulb was large enough and filled with the proper amount of liquid.

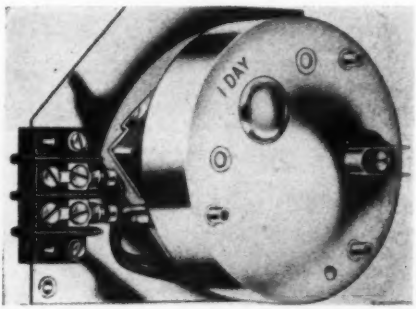
Although this type of system operated correctly whether the bulb was hotter or colder than the tubing, a reversal from one condition to the other disturbed the equilibrium for a short period of time.

Bulb size of this type of instrument proved to be an important consideration. When tubing and spring capsule were subjected to a temperature higher than that of the bulb, they were filled with vapor instead of liquid; expansion forced some of the liquid into the bulb which necessarily had to be large enough to accommodate it and still contain a vapor space, to assure a free liquid space at the bulb and no other point in the system.

Vapor-filled instruments were generally accurate and highly responsive, limited to about 250 degrees F. of total range, with selection possible anywhere between limits of minus 20 degrees to plus 500 degrees F.

Its charts and scales were called "progressive" because the chart divisions were not uniform and divisions spread as temperature rose. In this type of system pressure does not increase uniformly per degree rise in bulb temperature, but increases progressively so that the temperature-pressure curve for almost any range displays a characteristic upturn. Many of these instruments were provided with a cam movement to compensate lack of uniformity and to produce a uniform pen movement.

Most control instruments used in modern commercial lumber dry kilns are of the vapor-pressure recorder-controller type. Kiln manufacturers have generally found that freedom from errors due to changes in temperature of case and tubing is more important to proper control than chart scale.



Courtesy the Bristol Co., Waterbury, Conn.

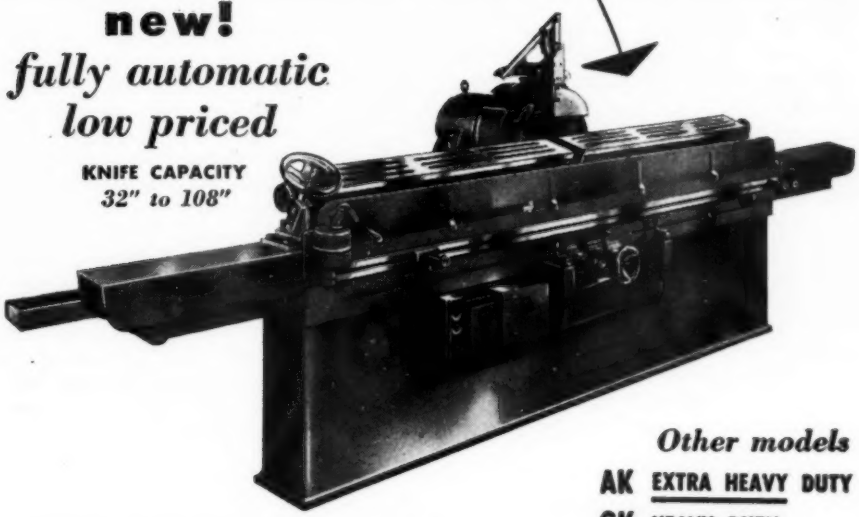
Electric drive mechanism operates with movement similar to electric clock.

HANCHETT MODEL DN knife grinder

new!

fully automatic
low priced

KNIFE CAPACITY
32" to 108"



Other models
AK EXTRA HEAVY DUTY
GK HEAVY DUTY

Model DN Features:

1. Timing belt drive. Positive — quiet — non-slipping.
2. Eliminates all gears (requires no lubrication).
3. Free from vibration and reversal shock.
4. 100% Anti-Friction Bearings.
5. Precision ground ways for accuracy.
6. Guarantees perfect machine alignment.
7. Force feed lubricated ways.

FINEST KNIFE EDGES

Write for complete information

HANCHETT MANUFACTURING COMPANY

World's Largest Manufacturer of Knife Grinding and Saw Sharpening Machinery

MAIN OFFICE — Big Rapids, Michigan

WEST COAST — Portland, Oregon

The portable wet-and-dry-bulb hygrometer was almost adapted as a recording instrument in the form of a wet-and-dry-bulb recorder thermometer, or recording psychrometer. Its wet and dry bulbs were installed inside the kiln and connected by tubes to the clock and dial mechanism outside the kiln to record temperature and humidity conditions within the kiln. The recording device was equipped with two marking pens, one recording the reading of the wet bulb, the other the dry bulb. The exact difference between the two, the wet bulb depression, was shown on the chart.

A recording wet-and-dry-bulb thermometer used in a commercial kiln of this period was an adaption of a standard two-pen vapor-pressure recording thermometer. A flexible capillary tubing with bronze armor connected the sensitive bulbs and the recorder, with a distance provision which permitted the recording case and bulbs to be installed some feet apart.

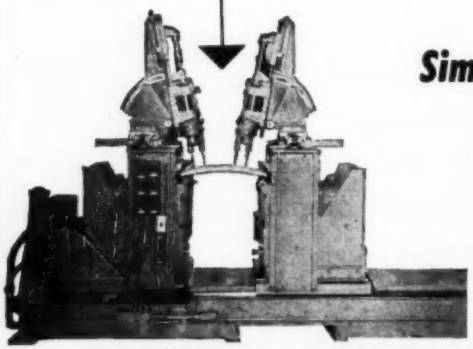
The thermometer bulbs were mounted on a water reservoir of the continuous-flow type designed to support the bulbs without contact of any sensitive portions with the metal of the reservoir. A wick fitted over the wet bulb was immersed in both upper and lower reservoirs to keep the bulb constantly wet. The dry bulb was located to one side a sufficient distance to prevent any appreciable effect by evaporation of the wet bulb. Connection to the recorder in standard installations was made with about 25' of flexible tubing.

Actually, two reservoirs were used, upper and lower, with the water supply connected directly to the upper reservoir and water overflowing from the upper reservoir directed into the lower reservoir. The wick over the wet bulb extended to both upper and lower reservoirs. Flow of water was regulated by a

MARION lets you...

DOVETAIL and BORE in ONE

Simultaneous Operation



This machine fills a long felt need for a practical double end Dovetailer that will bore the holes for drawer pulls at the same time on all types of drawer parts.

The MARION Dovetailer and Borer means greater production and lower cost.

For further information write Dept. BB

MARION MACHINE COMPANY

MARION, NORTH CAROLINA

valve in the line and was just sufficient to maintain a constant level in both reservoirs. An overflow union was provided leading from the lower reservoir and connected to a drainage system.

Few wet-and-dry-bulb thermometers were equipped with this double reservoir system and not all had continuous flow type reservoirs. In kiln applications where air circulation was good, or where a continuous source of water supply was not available, the instruments were often serviced with a bottle and cistern water feed.

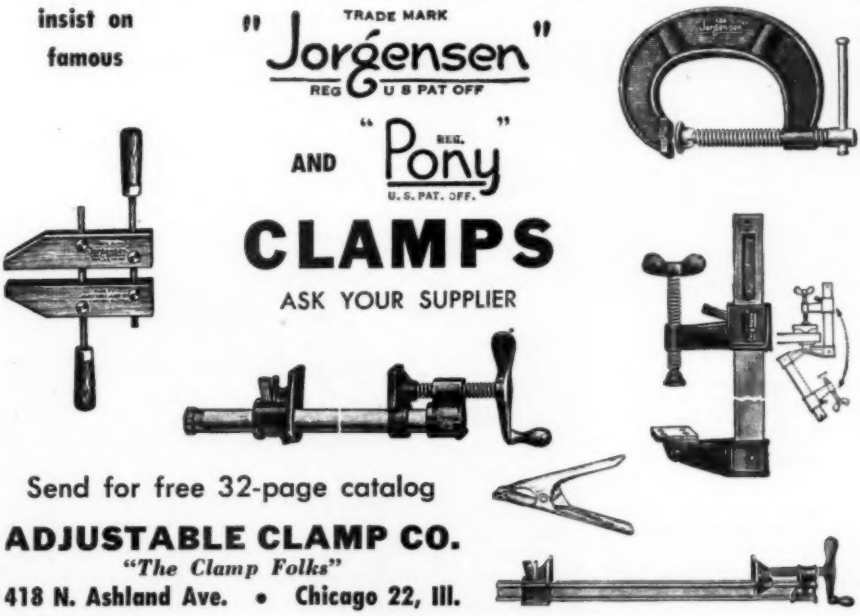
Some of these instruments were also equipped with a motor and fan, where the flow of air was not equal to the prescribed 12 to 15 feet per second. This auxiliary equipment consisted of a totally enclosed motor that was used to drive a suction fan operated to draw air at velocities up to 600 fpm through a housing of the wet-and-dry-bulbs. This arrangement simulated actual conditions inside the kiln by circulating samples of kiln air across both bulbs.

Charts used with these instruments were usually 8 or 12" in diameter, arranged either for one revolution in 24-hours or 7-days, as required. Two pen arms with pens tipped, were calibrated to record on the same time arc, but not passing each other. They were designed to record all ranges of wet-and-dry-bulb temperatures between 32 degrees and 212 degrees F., or a similar range.

SMITHWAY REPRESENTATIVE

The Smithway Machine Co., Seattle, Wash., announces the appointment of the Woodtools Co., Beloit, Wis., as sales and service representatives in the Wisconsin-Illinois area. Smithway manufactures the XL molder and XL ripper.

Woodtools now represents Peerless Saw Co., Stalter Edge Tool Co., Northfield Foundry & Machine Co., and are manufacturers of cutterheads and special tooling.



IN THE WOOD WORKING INDUSTRY:

STOP DRY AIR PROBLEMS

Scores of new users each year report increased efficiency and production, lower costs, finer quality with

Bahnson Unit Humidifiers

A TYPE FOR EVERY INDUSTRIAL NEED

- Units for every type of room or plant
- Highest capacity units at lowest cost
- Complete, free engineering service
- Water atomizing or steam units
- Simple installation—automatic control

* *One of several types of units in our complete line . . . from which we can choose the equipment best suited to your plant*

Send for the latest edition of our famous fact-filled booklet, W-3: "Humidity Control in the Woodworking Industry."

Bahnson COMPANY
WINSTON-SALEM, N. C.

MAKERS OF THE MOST COMPLETE LINE OF INDUSTRIAL HUMIDIFIERS

Polyvinyl Acetate Glues

for Woodworking

BY P. H. Mc CORMACK*

VINYL resin adhesives are relative newcomers to the woodworking trade, representing the development of new synthetic materials that filled the gap which occurred due to the shortage of animal and protein adhesives during, and immediately following, World War II. The enormous demand for adhesives to be used in military packaging during the war years had to be met by materials possessing greater speed, strength and durability to meet the extreme service demands of far flung military operations. These new synthetics did the job admirably. It was logical that these remarkable resins be introduced into new fields previously dominated by glues of natural origin.

Early History of Polyvinyl

As early as 1937, polyvinyl acetate began to be examined as a possible adhesive material for absorbent surfaces, ranging from paper to leather, building materials, and wood. Prior to this time, polyvinyl acetate was known largely in the form of a solid resin, or as a solution of the solid resin in solvent, and had been in use as an impregnant for wood, a thermoplastic cement for a wide range of surfaces and as an ingredient in finishing materials. Needless to say, the solid and solution forms gave little promise as production adhesives due to the fact that their setting rate was completely dependent upon the evaporation rate of the solvents employed, and was further influenced by the fact that films deposited from solvent solution had a tendency to retain solvent within the film over a long period of time. The latter fact induced a softening which materially impaired the adhesion of the surfaces, especially under conditions of elevated temperature.

The first practical adhesives based on emulsions of polyvinyl acetate were produced in 1939 by National Adhesives, and as early as 1940 similar formulations were submitted to the Forest Products Laboratory at Madison for government tests in gluing waterproof kraft shipping containers. Since that time the technology of polyvinyl acetate copolymer emulsions has expanded with amazing swiftness.

Advantages of Emulsion Form

The introduction of the emulsion form of polyvinyl acetate freed the user from the need to adjust evaporation rates of solvent, and opened up a com-

Mr. McCormack is development engineer, National Adhesives, New York City. His material was originally presented at a national meeting of the Forest Products Research Society and is reprinted with permission.

pletely new field of adhesive technology based on resin emulsions.

To understand polyvinyl resins in their adhesive use, it is necessary to have some grasp of the theory of emulsions and why they operate as they do.

An emulsion of a resin consists of tiny particles of the resin suspended or dispersed in water, and kept in uniform size and degree of distribution by means of carefully selected emulsifying agents. Emulsifying agents are materials which are mutually soluble in both the resin and in the liquid phase of the emulsion. If you sample an emulsion at random, the sample will reveal, under the microscope, a range of particles microscopic in size, yet uniform in their structure and in their relative distribution.

When an emulsion is placed on an absorbing surface, the acqueous phase is drawn by capillary action into the structure of the absorbing surface, leaving behind the tiny particles of resin. These particles then fuse together with great rapidity to form the adhesive film.

As can be drawn from the foregoing, the setting speed of emulsions depends upon two important factors. Firstly, the nature of the emulsion, and secondly, the absorbing capacity (i.e., the rate at which the absorbing surface can take up water), and is relatively immune to outside influences, such as temperature, humidity, pressure, etc.

Polyvinyl acetate emulsions were first introduced to fill the need for high speed packaging materials, and as such were unique when compared to the materials previously employed in that field, displaying phenomenal setting speeds, extremely high strengths, and resistance to the influence of moisture vapor, the effect of greases and oils, and also displayed remarkable tendency to adhere to practically any absorbing medium.

Adaptation to Wood

With the need for similar speed in furniture assembly plus the war-time shortage of protein and starch glues, then in wide spread use for the manufacture of furniture, it was natural for the adhesive manufacturer to explore the possibilities of employing vinyl acetate emulsions for the bonding of wood. The initial introduction of these materials, on an experimental basis, occurred, to the best of our knowledge, in 1943. The initial reaction to these adhesives was overwhelming. The fast-setting effect was unbelievable to people who had previously employed hot and cold solutions of animal glue. Before the field could be explored properly, consumer pressure literally forced many manufacturers into supplying what were then limited quantities of vinyl acetate emulsions for joint assembly of furniture, and the preparation of dimension stock.

Coincident with the introduction of these resins, there was an unprecedented consumer demand for furniture, a serious shortage of skilled employees, seasoned lumber, and as has been stated before, a shortage of both adhesive materials and the technology surrounding their use. All the above factors contributed to serious troubles which followed the too rapid introduction of this new material into the furniture industry.

A few adhesive manufacturers were then investigating and have continued extensive exploration of the working properties of these materials in respect to the preparation of the emulsion itself, and the chemical composition of the basic resin used.

Within a matter of a few short years, the technology of the manufacture and use of vinyl acetate adhesives has overcome many of the earlier deficiencies present in these materials and has yielded a material capable of producing

durable joints, available in unlimited quantities for the woodworking trade.

Development of Setting Speed

The most important feature of polyvinyl acetate emulsions is their rapid setting speed when contrasted to materials previously used for joint assembly. Without the use of auxiliary curing methods such as radio frequency generators, hot presses and strip heaters, emulsion adhesives produce workable bonds on most species of North American woods within periods often as short as 20 minutes.

One of the best comparisons of rate of strength development can be found in a thesis prepared by George McSwain at Yale University in 1949. McSwain compared the setting rates of four well known vinyl emulsions to animal glue. Yellow birch veneer lap-joint specimens were employed and the dry shear was taken over a period of 180 minutes. The initial wet strengths of emulsions and animal glue were found to be approximately the same for the first minutes of the experiment. However, within 10 minutes, the emulsions tested displayed better than twice the strength of the animal glue, and at the end of the first hour the emulsions showed a range from 550 psi. to 750 pounds as contrasted to 400 pounds for the animal glue. It is clearly evident from a test of this nature, which has been duplicated many times in our adhesive laboratories, that there is a definite factor of safety in joint strength for handling purposes between assembly joints prepared with emulsion adhesives, over joints prepared with animal glues.

Tolerance to Clamping Variance

In addition to this, studies have been made employing block-shear specimens to determine the influence of clamping pressure on joints prepared with both vinyl acetate copolymers and animal glue.

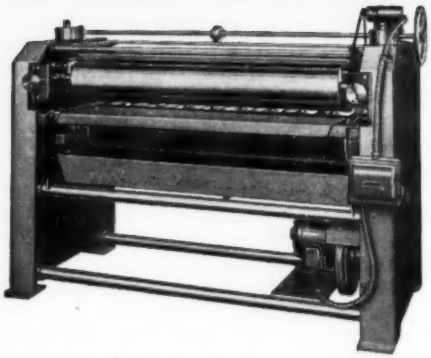
In a report prepared by Dr. J. S. Bethel and R. A. Moore at North Carolina State College tests were made employing pressures of 10 psi. and 150 psi. on maple block-shear specimens prepared with hot animal glue and vinyl copolymer emulsion glues. At 10 psi., it was shown that the average shear strength of the vinyl resins tested were respectively 3,817 and 3,273 psi. in dry shear, contrasted to a dry shear glue of 1,349 psi. for animal glue.

The results obtained were significantly different at 150 psi. The vinyl emulsions producing dry shears of 3,553 psi. and 3,647 psi., with 3,694 psi. for the hot animal glue.

The above results give some indication of the advantages of employing vinyl copolymer adhesives in joint assembly. It is seldom possible to maintain clamping pressure for a prolonged period of time in ordinary production work. Depending upon the nature of the fit of the joint, internal pressures will range from zero between the joint faces to several hundred psi. It is necessary, therefore, to employ adhesives which will perform well at both low and high clamping pressures. There is

"I know I sent you for glue, but I didn't mean fish glue!"

a UNION machine . . .
TO MEET ANY WOOD GLUING NEED



Name of Union agent in your territory supplied on request.

•

Write for your free copy of Union Booklet, "The How's and Why's of Wood Gluing," by Thomas D. Perry.

UNION TOOL CORP.
300 EAST MARKET STREET
WARSAW, INDIANA

UNION SERVES OVER 2,500 SATISFIED CUSTOMERS

UNION AUTOMATIC ROLLER COATER

Unexcelled for accurate, economical operation in spreading all types of coatings. Standard models take sheet widths from 12" to 108"; thickness variance from 0" to 2". Available with hollow rolls to permit circulation of cold water through them, thereby prolonging the pot life of resinous adhesives. A reduction of 15° will double your pot life. Available with rubber-covered doctor roll at no extra cost.

•

Union makes equipment for every standard production job in wood gluing. Also designs and makes machines for special applications—including machines for electronic gluing. Write for data on the complete Union line.

• • • •

USERS SAY UNION CUTS COSTS — SPEEDS PRODUCTION

an increasing tendency in the woodworking trade to allow the joint in effect to produce its own clamping pressures; that is to say, produce a joint having a sufficiently snug fit to maintain alignment of the surfaces glued, even without glue being present.

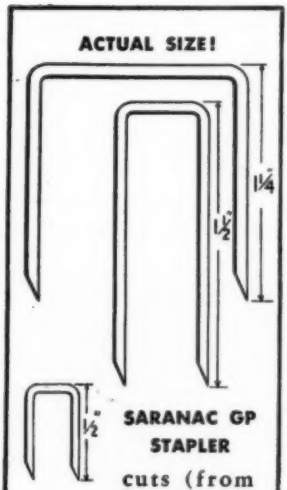
Under these conditions, we can assume that pressures are at least in excess of 5 psi. and may be as high as 100 psi. between the joint faces. The use of such a joint is restricted by the natural tendency of an extremely tight fitting joint to remove the glue applied due to the wiping effect when the joint is assembled. Since such joints are in common use, however, they are often made with vinyl emulsions to allow a wide margin of safety, regardless of clamping pressure.

Overcoming Plastic Flow

Many of the early difficulties experienced with polyvinyl acetate emulsions appear to have been caused by the inability of the adhesive to withstand continuous loading (creep). This problem has been approached from several directions. Persons who are interested in the degree of creep measurements have employed mechanical methods of loading the joint to a known value. Various systems have been used, rang-

3 THINGS YOU SHOULD KNOW ABOUT MAKING YOUR OWN WOODEN CRATES AND BOXES

1. THIS HAND METHOD of making crate and box panels is slow and *expensive!* But many manufacturers haven't discovered it—because they haven't compared costs with *stapling!*

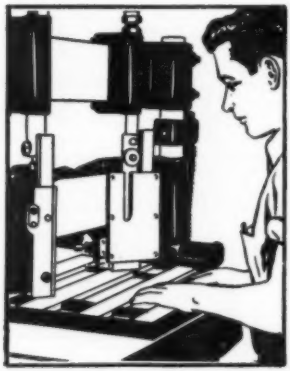


cuts (from low-cost coils of wire), forms and drives most any size staple you want. Note *heavy gauge* of staples.

2. STAPLES DO THE JOB — at *far less cost,* even on crate quantities of dozens or hundreds. And each staple has *40% more holding power* than a nail.

3. THE SARANAC General Purpose Stapler does the job *far faster*—makes *stronger* crates—pays off on short or medium runs. It's a heavy-duty machine—but reasonably priced. And the staples cost less than nails!

JUDGE FOR YOURSELF! Take just a minute to write for Bulletin 166.



Handles a wide variety of jobs. One or two stapling heads. Popular for shorter runs and odd jobs in large plants.

SARANAC MACHINE CO.

Benton Harbor, Michigan

Manufacturers of the World's Largest Line of Fastening Machinery

ing from dead loaded lever arms to constant pressure maintained by hydraulic testing machines, or screw pressure transmitted and maintained by means of calibrated springs, etc. In addition to this, experiments have been conducted in the past by the Forest Products Laboratory and others by preparing panels glued with a variety of adhesives and exposing these panels to alternating cycles of temperature and humidity with a view towards introducing natural wood stresses in the glue line.

To illustrate how research in vinyls has contributed to their widespread application in the furniture industry, I would like to cite two examples from the experience of my own company.

In the first case, the early vinyl adhesives tested were shown to have deficiencies in respect to their ability to withstand the influence of continuous loading and elevated temperatures regardless of how the loading was accomplished. It was clearly felt by National Adhesives that these and other early difficulties could be overcome by a revamping of the resins employed. As a result, six years ago the first of the vinyl acetate copolymers was introduced to the woodworking trade by National Adhesives. This particular copolymer has met with very wide acceptance in the woodworking trade, primarily as an assembly glue and also as an adhesive for the lamination of wood under such specialized conditions as vacuum-bag molding and the bonding of high-pressure laminants to wood. This specific vinyl acetate copolymer is distinguished by its exceptional resistance to cold flow or creep under elevated conditions of both temperature and loading. Through a careful choice of emulsifying techniques, the setting speed of this unique copolymer represented a marked increase over the very

Burning WOOD SCRAP instead of COAL

saves this luggage manufacturer $6,000 annually on fuel bill

. . . . with help of

AMERICAN WOOD HOG

"We have fed as high as 3,000 lbs. of wood scrap per hour to this hog," writes this well-known luggage maker. "Since the installation of our wood-burning equipment *we have not purchased a single ton of coal* for boiler use! And the result in savings has amounted in excess of $6,000 annually."

WRITE for new WOOD HOG BULLETIN

American PULVERIZER COMPANY

1510 MACKLIND AVE. • ST. LOUIS 10, MO.

"I can do any planing job three times faster with my SKIL Electric Plane and with just as much accuracy if not more,"

says skilled craftsman of HERMAN MILLER Furniture

At the Herman Miller Furniture Company of Zeeland, Michigan, where famous modern furniture is manufactured, SKIL Electric Planes have proved themselves on the job. Originally purchased for minor trimming adjustments, they are now used for jobs that usually require a stationary machine.

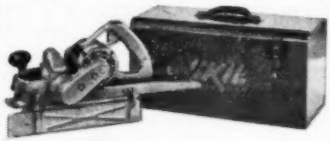
As one craftsman says, "The SKIL Plane has certainly made repairing and finishing of cabinet work much easier. After setting the blade to desired depth, I can remove excess stock with one pass. There is no comparison to the old way of hand planing."

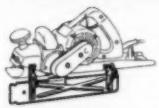
Versatile! Does Both Edging and Surfacing!

***Fast!* 10 Times Faster than Hand Planes... and Almost as Light!**

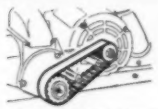
Low-Cost!* Lowest-Priced 3" Combination Plane *anywhere!

Model 190, with steel case, $139.50

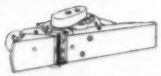




Perfect Balance: Unique placement of motor over the work allows edging and surfacing with perfect balance at all times.



Cog-belt Drive: Noiseless; absorbs shock, tough... easily replaced. Needs no oiling!

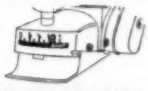


Straight Cutters: Simple to sharpen, easier, less expensive to replace than curved cutters.

Reversible Chip Deflector: Convenient, easy to change to left or right.

Bevel Guide: 90° adjustment for 45°, right or left bevel.

Widest Cut: Only 3" plane available at this low price.



Click-Stop Depth Adjustment: Located for quick, easy setting of 1/64" calibrations from 0 to 1/8".

All Ball-Bearings: REQUIRES NO LUBRICATION or MAINTENANCE.

SKIL

PORTABLE TOOLS

Made only by SKIL Corporation
formerly SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
3601 Dundas Street West, Toronto 9, Ontario
Factory Branches in All Leading Cities

See your distributor for complete information or call your nearby SKIL factory branch

rapid setting speed of polyvinyl acetate based adhesives, and as a result became the standard reference material for our laboratories in developing new vinyl copolymer adhesives for the woodworking trade.

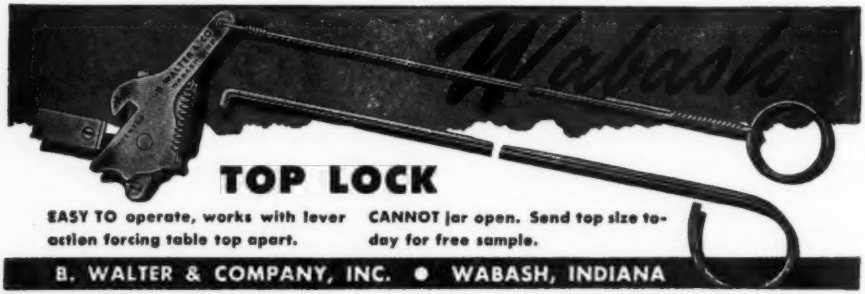
Low Temperature Sensitivity Corrected

In the second case, we discovered that the vinyl acetate copolymer in this formulation, while remarkably successful in the woodworking trade, had a serious drawback from the standpoint of shipping on the part of the manufacturer, and storage on the part of the user. Like most polyvinyl acetate emulsions, this material was sensitive to low temperatures in storage. It was quite often coagulated and rendered unfit for use by exposure to temperatures under 40° F. In this regard, it was not unique since all other emulsion adhesives then in use also suffered from this deficiency. In the winter months, it was necessary for our firm to maintain extensive facilities for shipping by heated truck, and the introduction of the material into many plants was impaired by the need for storing this adhesive at temperatures above 40° F.

Development of Improved Copolymer

Three years of intensive research and development have produced a new copolymer. This resin represents a further improvement over its predecessor in setting speed, resistance to elevated temperatures and loading, easy machinability, and is completely freeze-thaw stable. This unique property of resistance to damage by repeated freezing and thawing now makes the wide spread use of vinyl copolymer emulsion adhesives a certainty.

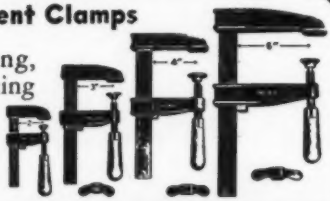
These results were confirmed by the North Carolina State College Wood Products Laboratory by alternately freezing and thawing this formulation prior to gluing for two cycles and test-


Wabash
TOP LOCK
EASY TO operate, works with lever action forcing table top apart.
CANNOT jar open. Send top size today for free sample.
B. WALTER & COMPANY, INC. • WABASH, INDIANA

HARTFORD CLAMPS
Since 1915

Deep Engagement Clamps

Designed for long, hard usage. Locking device locks instantly; will not slip or stick.



HARTFORD CLAMP COMPANY • EAST HARTFORD, CONN.

PRESENTING

THE NEW POWERMATIC

MODEL 50—6" JOINTER

FEATURING A 48" LONG BED

Priced, less stand & motor $119.75

The NEW Powermatic 6" Long Bed Jointer is designed to meet all the requirements of the Woodworker. Featuring the same rugged construction prominent in all Powermatic equipment, this new Jointer offers the operator performance plus. The 48" bed features DUAL adjustable tables with rabbeting capacity of 6". A totally enclosed extremely heavy steel floor stand protects both operator and motor. A 3 knife cutterhead, mounted in sealed ball bearings, operates at 5000 RPM. Write for complete information.

MANUFACTURED BY

POWERMATIC MACHINE COMPANY

McMinnville, Tennessee

ing in dry shear. The results obtained indicate, and have been confirmed by our laboratories on many occasions, that for some, as yet unknown, reason freezing and thawing this emulsion is beneficial in regard to strength values obtained in dry shear.

The unfrozen emulsion had an average dry shear strength of 3,495 psi. and after two cycles of freezing and thawing an average strength of 4,144 psi.

This property represents a definite safety factor on the part of the user, and insures against damage of the adhesive during shipment and storage, thus protecting the user from the possibility of inadvertently using a frozen emulsion. In addition, this particular product can be used at shop and material temperatures as low as 50° F.

The Rapid Setting Factor

The rapid setting speed of this copolymer, coupled with its ideal viscosity for machine application, has brought about many changes in the operation of those furniture plants which have adopted its use.

This material is ideally suited for use in pressure applicators, both the hand operated and the compressed air type, for the positive injection of glue into dowel holes, into grooves, corners, for blocking purposes, and into many other locations in furniture joints.

Rapid setting speed coupled with the relatively small influences of clamping pressures between 10 and 150 psi., permits assembly of furniture with only brief clamping cycles, prior to passing the piece to the next succeeding operation.

In addition, the exceptional bond produced by the particular copolymer between high pressure laminants and wood surfaces has led to a revision of operations in a number of plants that heretofore had employed catalyst activated resins or casein glues in the production of dinette tables, sink and counter tops, and plastic faced furniture. It is now possible to schedule goods in a flat laminating operation by gluing stack-wise, followed by a short press cycle and then removing the goods from the press. Additional bond strength develops without the need for baling. In this way the efficiency of the press is increased by the number of I-beams removed from the bale. The labor charges for the handling of the retainer clamps and the unfinished bale are reduced. The efficiency of the operation has even impressed those firms which were equipped with single- and double-opening hot presses to accomplish the same thing. The press time is as short as 15 minutes for a bale, thus coming very close to the production capacity of a double-opening hot press, without the attendant expense of glue preparation, operation and investment charges.

As can be seen from the foregoing,

Because SOUTHERN **fasteners arrive on schedule!**

Time is Money. We concentrate on prompt service from widest range of sizes and finishes in stock. In a matter of minutes after your order reaches us your fasteners are on their way to you, by the carrier of your choice.

Write us for free samples and stock list. Box 1360-D.

SOUTHERN SCREW COMPANY

STATESVILLE, NORTH CAROLINA

WOOD SCREWS • STOVE BOLTS • MACHINE SCREWS • DRIVE SCREWS
TAPPING SCREWS • HANGER BOLTS • CARRIAGE BOLTS

FACTORY WAREHOUSES: New York, N. Y. • Chicago, Illinois
Los Angeles, Calif. • Dallas, Texas

the development of polyvinyl adhesives has followed a pattern not unique in the marketing of new chemical developments. One by one, the initial limitations of a new material have been set aside to make the benefits of American chemical technology available to industry.

The astounding growth of polyvinyl adhesives has been due largely to the fact that they are very fast setting, high strength materials, they are ready for use, they bond to a wide variety of materials including wood, high pressure laminants, etc. Each year, literally millions of furniture joints are bonded with vinyl adhesives.

The new vinyl copolymer products are completely freeze-thaw stable, have good heat resistance under loaded conditions, and make possible high speed furniture production. They have set the pace for the advancing technology of the woodworking industry.

PAINT SPRAY GUNS
13 different models

GUN NOZZLES
for paints and coatings of all kinds

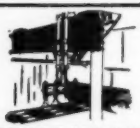
MATERIAL TANKS
2 to 60 gallons

OIL AND WATER EXTRACTORS
7 models to supply clean, dry air

SPRAY BOOTHS
over 510 styles and sizes

AIR COMPRESSORS
60 models 1 to 105 c.f.m.

EXHAUST FANS
Exhaust Fans 21 models—each meeting safety standards



AUTOMATIC SPRAYING EQUIPMENT
for lower production costs

MATERIAL HANDLING PUMPS
9 models

HOSE AND ACCESSORIES
12 types of hose all accessories

Everything

FOR SPRAY PAINTING and COATING

Binks **the complete, 1-source line of integrated equipment**

If the material can be applied by spraying, you will find in Binks complete line exactly the right equipment to do the job better, a little faster and usually more economically.

You have more than 1100 *standard* products from which to choose...all designed to work together...all the result of more than 50 years helping manufacturers improve their spray painting and coating operations.

If you have a problem involving the application of fluids...from water to heavy asphaltic materials...Binks engineers are ready to help you work out the simplest, best and lowest-cost solution.

Normally, all Binks products can be shipped immediately by your local Distributor. You save time, money and effort when you standardize on Binks equipment.

MAIL COUPON TODAY

for fact-packed catalog...it's FREE

Binks

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES. SEE YOUR CLASSIFIED PHONE DIRECTORY

Binks Manufacturing Company
3116-34 W. Carroll Ave., Chicago 12, Ill.

Gentlemen: Please send me at once a FREE copy of CATALOG DATA-BOOK NO. 956 which describes Binks complete line of integrated spray painting and coating equipment.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

Part 1

SECTION

Wood Furniture Finishing

BY HAROLD B. GATSLICK

IN THE past decade, developments in the field of wood furniture finishing have affected many changes and expanded finishing from a custom-type craft to a production-geared science. Before discussing the whys and hows of preparing a surface for application of finish coats, it might be well to remember that the four principal reasons for finishing wood furniture are decoration, protection, sanitation and salability.

A quality finish adds to the beauty and decor of a well-designed piece of furniture by bringing out grain variations and tonal effects that are hidden or lacking in the unfinished state.

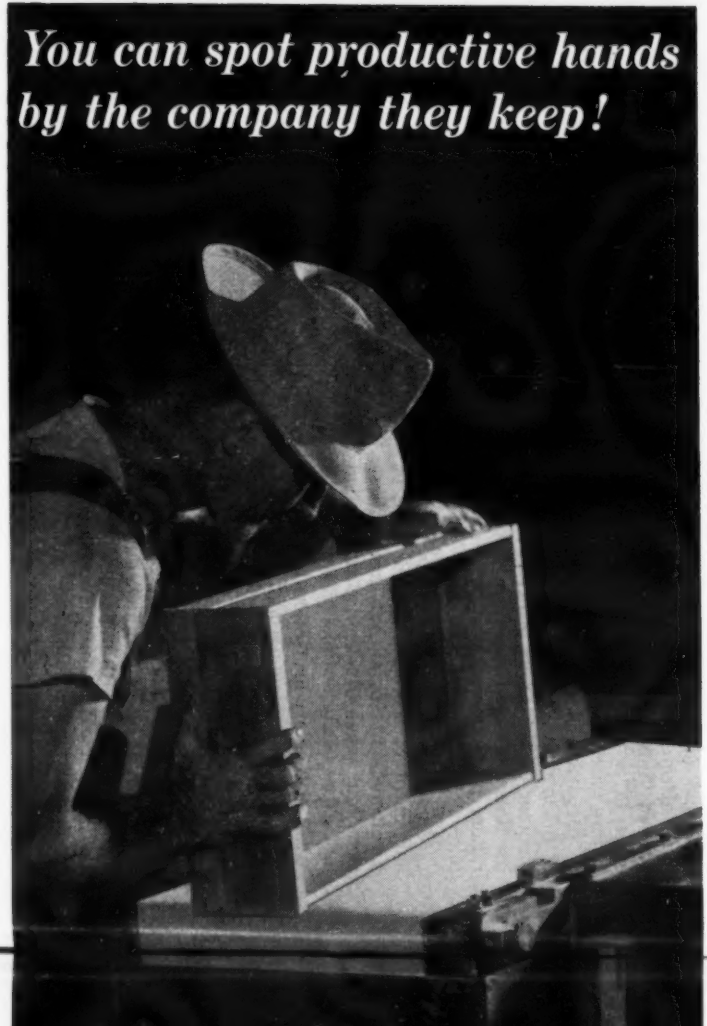
A finish offers protection from abrasion, chemical reagents and other material effects that would otherwise detract from the appearance of the furniture. In addition, the dimensional stability of the furniture is increased. The effect of compression shrinkage on nails, screws and other holding devices is reduced, thereby prolonging the useful life of the furniture. For compression shrinkage to occur, the wood does not have to be moistened with water. Exposure to high humidities produces the same effect.

The average moisture content of wood furniture in service is six to eight percent. Tests have showed that at least 1/1000" film thickness after rubbing is required for adequate protection. This means a coat of sealer and at least one topcoat must be used. Two or three topcoats are even better, but beyond this the rate of increase of moisture-excluding effectiveness falls off rapidly.

A well-finished wood surface is easy to clean and adequate sanitation standards can be easily maintained.

The decoration, protection and sanitation features are important selling points in gaining customer acceptance, but the increased economic value and the salability of a finished piece of furniture are far beyond the actual cost of finishing.

You can spot productive hands by the company they keep!



Drawer sanding gets a lift with Behr-Manning abrasive belts

The job is fast and easy with this up-to-date coated abrasive application. A wide BEHR-MANNING abrasive belt, cool cutting and long-lasting, teams with a glass-lipped drawer sander to assure superior finishes at record breaking speed.

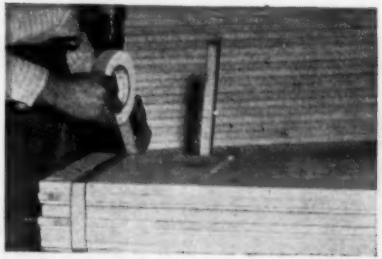
Whatever your finishing problems, a BEHR-MANNING Field Engineer can be helpful. He'll recommend a solution and prove it in your plant or at a

Whatever your finishing problems, a BEHR-MANNING Field Engineer can be helpful. He'll recommend a solution and prove it in your plant or at a BEHR-MANNING Demonstration Room. Write Behr-Manning, Troy, N. Y., Dept. WD-2.

In Canada: Behr-Manning (Canada) Ltd., Brantford.
For Export: Norton Behr-Manning Overseas Inc., New Rochelle, N. Y., U. S. A.

W-2

Delappe Discs are tops for smoothing contoured edges.



Behr-cat Strapping Tape holds tight without damaging wood surfaces.

India and Hard Arkansas Oilstones for clean, sharp cutting edges.

BEHR-MANNING®

division of NORTON Company

▲ COATED ABRASIVES ▲ SHARPENING STONES ▲ PRESSURE-SENSITIVE TAPES

This is the first in a series of articles on production wood furniture finishing by Dr. Harold B. Gatslick, Instructor in Forest Utilization at the State University of New York College of Forestry, where he is a specialist in dry kiln engineering and production wood finishing. This series is based on his doctoral dissertation entitled *Wood Furniture Finishing—Modern Materials and Procedures in Wood Furniture Finishing With An Analysis of Research, Development and Suggested Research* which will be used as a guide for applied and basic finishing research at the College. Dr. Gatslick was formerly associated with the Plastics Divisions of Monsanto Chemical Company as a Technical Field Representative.

The second article in this series will deal with detailed information about abrasives.

• • • • •

The wood furniture finisher is dealing with a heterogeneous natural substance presenting, under the most ideal circumstances, an array of variables. All too often, control of these variables is not adequately affected prior to the application of the finishing materials themselves. Surface preparation really starts at the dry kiln and is continued through machining and final "white" sanding. If the stock has not been dried to a uniform, stress-free condition and held in that condition through machining and the final finishing operation, a quality economical finish cannot be obtained. Minor surface defects normally can be eliminated in the final sanding stages, but the inherent stress and the poor adhesive qualities of a surface must be eliminated prior to this stage.

If a piece of wood furniture is to be finished yielding rich, uniformly refractive tonal qualities as well as maximum protective qualities, a smooth, clean, stress-free, attractive surface must be available for both the preliminary and top coat application.

Moisture Control

Moisture control is a necessary part of surface preparation since it affects the quality of machining and sanding. If the stock is too dry, generally below six percent, the wood is too brittle and, consequently, torn grain and chipping become a major problem. If the stock is too wet, above ten percent, fuzziness or incomplete cutting by both machine tools and abrasives produces raised grain problems. Improperly dried machined stock necessitates increased white sanding, which in itself cannot be 100% effective, but certainly is more costly. Attempted corrections by the use of washcoats and size may not be completely effective and might not otherwise be required.

Moisture control also affects the stress developed between the wood and the finish film. If a wide range of variation is encountered in normal use, film failure can result. The moisture content also affects the permeability, surface attraction and adhesive properties of the surface.

The depth of penetration of the finish film should be only sufficient to allow adequate adhesion for maximum durability. The amount of material that enters the wood beyond this point adds little or nothing to the surface efficiency, but adds considerably to the cost of the finishing operation.

Normally, the optimum range of moisture content is from six to ten percent to give surface properties so that maximum film strength can be obtained.

Structural variations in woods of different species materially affect the permeability or penetration of liquids such as stain solutions, sizes, washcoats, etc. Penetration also is related to the viscosity of the finishing material, its temperature and the moisture content of the stock. It is necessary to control as many of these factors as possible to assure such things as uniform staining, adequate flow of film-forming materials

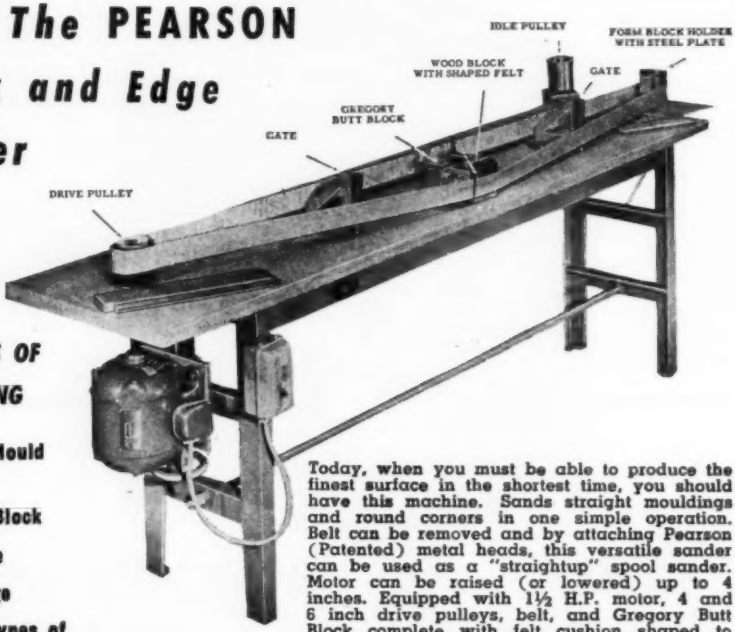
New... 24" SINGLE DRUM ENDLESS BED SANDER

This non-oscillating 24" drum produces smoothest kind of sanding on hard or soft wood. Drum is of metal construction, 24" long, 14" diameter, felt covered, with spring action lock keeping sandpaper snug and tight. Non-oscillation of drum leaves no cross streaks. Has variable rate of feed, 15 to 30 feet per minute. Can be stopped and started while machine is in operation. Feed works fitted with grease fittings for lubrication. Endless bed fitted with rubber inserts. Frame is of welded steel construction, cabinet type, rigid, with doors on both sides. Has capacity for material up to 6" in thickness. Standard machine has capacity for stock as short as 15". On special order — machine can be fitted with two extra Idler rolls to handle stock as short as 8". Dust hood easily removed for changing sandpaper or for sanding curved work on top of drum. Drum bearings have pregreased sealed races. Idler rollers mounted on sealed tight ball bearings. Machine driven with 3 HP motor 220 Volt, 3 Phase, or 110/220 Volt, Single Phase double Vee belt drive, with starter. Weight 650 lbs. Floor space 46"x40".

Complete with motor platform, grooved pulleys, endless belts, wiring and starter.

WOODWORKERS TOOL WORKS
220 South Jefferson Street • Chicago 6, Illinois

Faster, Smoother Sanding With The PEARSON Block and Edge Sander



5 TYPES OF SANDING

Stationary Mould Block

Hand Slide Block

Curved Edge

Straight Edge

Spool (All types of curves)

Today, when you must be able to produce the finest surface in the shortest time, you should have this machine. Sands straight mouldings and round corners in one simple operation. Belt can be removed and by attaching Pearson (Patented) metal heads, this versatile sander can be used as a "straightup" spool sander. Motor can be raised (or lowered) up to 4 inches. Equipped with 1½ H.P. motor, 4 and 6 inch drive pulleys, belt, and Gregory Butt Block complete with felt cushion shaped to fit any one mould. Length of belt is 19 feet; table 24 inches wide. Overall length is 11 feet.

We Also manufacture Scroll and Drum Sanders.

Write for Complete Data

PEARSON SANDING MACHINE CO., INC.
HIGH POINT, N. C.

and optimum finish drying times. The fact that end grain penetration generally is considered to be 15 to 25 times greater than transverse penetration is a major point which is in no small way affected by the moisture content of the stock.

It is essential for a surface coating to adhere tenaciously to the object it is to protect. Failure of the coating to bond to the object results in rapid deterioration and degradation of the coating. In order to get adequate adhesion, there must be attraction of the surface molecules of the wood for the finishing materials. Insufficient or excessive moisture tends to reduce the net attractive force, thereby reducing adhesion or film durability.

There are numerous materials in the air such as gases, dirt, dust and oil which may alter the surface properties. It is, therefore, important that the

3M Production Paper Belts are always sharper!

Blindfolded stroke sander operator picks Production Paper belts 20 times out of 20!

Yes, in this actual test, a blindfolded operator was asked to feel the difference between 20 different Production Paper belts and a like number of ordinary stroke sanding belts. He found Production Paper belts *sharper* every time!

Production Paper belts *feel* sharper because they *are* sharper. Their *extra sharpness* guarantees you the best possible stroke sanding job, *if you let the belt do the work.* By this method you get more production with less effort, better finishes faster, and a higher rate of cut for the entire belt life.

EXAMPLE: a Production Paper belt used for 6 hours still *cut off* all the wood fibre fuzz from a test panel . . . ordinary paper belt merely ironed the fuzz down!

Remember, for best white-wood sanding, always use Production Paper belts . . . and be sure to specify 3M every time you order. For complete information, write for booklet, "3M System of Furniture Finishing".

The final finish mirrors all previous operations

3M ABRASIVES

Minnesota Mining & Mfg. Co.
Dept. WW-25 St. Paul 6, Minn.

☐ Send me the booklet "3M System of Furniture Finishing"

☐ I'd like to talk to a 3M Salesman

Name.....Title.....

Company.....

Address.....

City.....Zone...State.....

Made in U.S.A. by Minnesota Mining and Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: London, Ont., Can. Export: 122 E. 42nd St., New York City. Makers of "Scotch" Pressure-Sensitive Tapes, "Scotch" Sound Recording Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing.

New Efficiency

The sensational new FLEX-A-PRENE Paint Mask keeps out paint pigments and solvents with amazing efficiency, yet it's light (just 1 ounce), comfortable and so easy to talk and breathe through you hardly know you're wearing it.

New Economy

FLEX-A-PRENE's low first cost is only part of the story. Most important savings come from its endurance in service and time saved through less frequent filter replacements. You can expect at least 100 hours of exposure before replacement is necessary.

Sample: $1.50 postpaid

FLEXO PRODUCTS, INC. Cleveland 13, Ohio
(formerly, The Goggle Parts Co.)

finisher have a minimum time lapse between final machining and/or sanding and the application of an initial surface coating. Clean, freshly exposed wood is made up of a relatively uniform surface with a high uniform attraction.

It might be well to touch briefly upon a general discussion of adhesion since it is directly related to the quality of surface preparation. Adhesion is divided essentially into two broad groups: (1) mechanical adhesion, which is dependent upon the penetration of and anchorage in an irregular porous surface; (2) specific adhesion, in which unlike molecules or particles of matter are held together through a net physical-chemical attraction.

Mechanical adhesion is considered by some to be of major significance in the gluing of wood and similar porous materials. The degree is questionable. In wood finishing, specific adhesion is of major importance, not only in initial

THE MOST AMAZING FINISH DEVELOPMENT IN 100 YEARS!

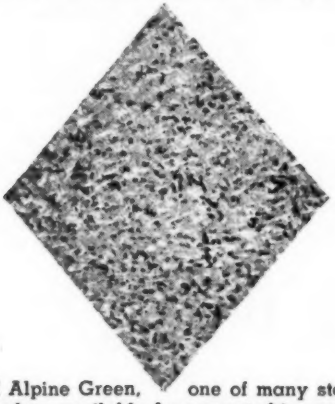
COLOR-FLECKED

M. & W. CO.

PLEXTONE®

SINCE 1876

Imagine—a textured and MULTI-COLORED finish—sprayed at ONE time, from ONE gun, in ONE coat that covers surface flaws and blemishes completely!



PLEXTONE Alpine Green, one of many standard pre-mixed colors available for prompt shipment. Also available in solid colors and in custom multicolors.

CAPSULE FACTS

COLOR-FLECKED PLEXTONE is a new industrial finish in which colors exist separately until sprayed, when they interlace as shown above.

CHARACTERISTICS

Lacquer base • Air dries approx. 30 minutes — dries hard 2 to 3 hours • Available in flat or semi-gloss • Good chemical resistance • Exceptional hiding power • Does not stain • Resists wear, chipping, cracking • Can be scrubbed, even scoured • Can be touched up without showing • Thicker film hides surface imperfections, covers porous materials • Available in non-toxic grades • Bonds readily to wood, wallboard, paper, cement, plaster, phenolic impregnated papier-mache forms, plastics, woven fabrics, and metals such as cast iron, steel, aluminum, brass, copper.

PLEXTONE—CUTS FINISHING COSTS UP TO 35%

Eliminates much costly pre-finishing, hides surface flaws. Usually only one prime, one PLEXTONE coat required!

PLEXTONE — UNBELIEVABLY RUGGED!

Color flecks go "thru-the-film," resist abuse, defy alcohol, grease, oil. Can be washed, scoured, without damage!

PLEXTONE — SALES APPEAL OF *MULTICOLOR!*

Endless new effects of 2, 3 or more colors sprayed from one gun, at one time . . . tone-on-tone, spatter-dash, etc., etc.

PROVE IT TO YOURSELF—MAIL COUPON TODAY

MAAS & WALDSTEIN CO.

2115 McCARTER HIGHWAY, NEWARK 4, N. J.

Midwest Division: 1658 Carroll Ave., Chicago 12, Ill.

Pacific Coast Division: Smith-Davis Company, 10751 Venice Blvd., Los Angeles 34, Cal.

PIONEERS IN PROTECTION

PLEXTONE®

MAAS AND WALDSTEIN CO.
2115 McCarter Highway, Newark 4, New Jersey

Gentlemen: Please send me FREE color chips, PLEXTONE sample, and application data.
I am particularly interested in PLEXTONE for finishing _____

Name_____Title_____

Company_____

Address_____

City_____Zone_____State_____

coatings but also with subsequent undercoats and topcoats. This effectively means that the wood must be chemically as well as physically smooth and uniform if a quality job is to be accomplished.

Moisture content control is not the whole answer to quality surface preparation, but its importance should not be de-emphasized.

Machine Surface Preparation

The quality of the finish is dependent primarily on the quality of machine surface preparation. This statement involves the machining from planing to final belt polishing.

Detailed information relative to machining requirements will be covered in subsequent articles. It should be pointed out at this time that machine room inadequacies are accentuated rather than cured in the finishing room. Factors to be considered include the type of machine, type of cutters, their speed, sharpness and the feed speed. The sanding operation is simplified by accurate control of machine room quality.

What is Sanding?

The term "sanding" is poor and is not descriptive of the materials used or the techniques involved. Sanding may be classified into two main divisions:

1. Wood sanding or "white" sanding which includes those sanding operations prior to the use of any finishing material
2. "Finish" sanding or those sanding operations used after the application of an undercoat or topcoat material

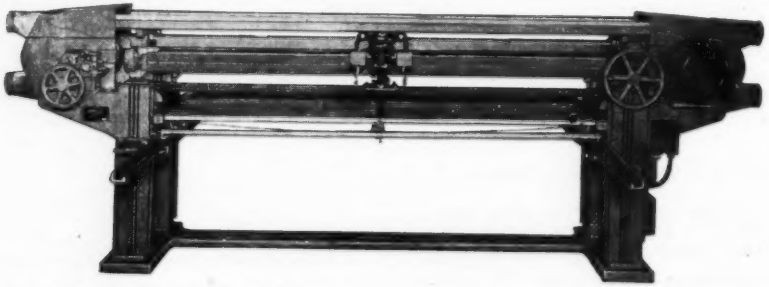
The purpose of "white"sanding is:

1. To prepare a uniform surface to accentuate the inherent beauty of the wood by eliminating machining surface defects
2. To prepare the surface so that maximum adhesion of undercoats may be achieved.

The OAKLEY D-1 DOUBLE BELT SANDER

• CUTS DOWN • POLISHES • ELIMINATES DRUM SANDER ON VENEERED STOCK • ELIMINATES RAISED GRAIN • ELIMINATES SPONGING • PRODUCES SUPERIOR QUALITY

ALL ACCOMPLISHED AT ONE OPERATION SEMI-AUTOMATICALLY AT HIGH SPEEDS



With a single handling, the Oakley D 1 Double Belt Sander removes the tape, polishes, eliminates raised grain . . . without sponging or glue sizing . . . and the stock is ready for the finishing room. This is only one of the many quality sanding machines designed and built by Oakley for the woodworking industry. Write today for full information.

THE OAKLEY COMPANY
BRISTOL • TENNESSEE

Choose the right sander

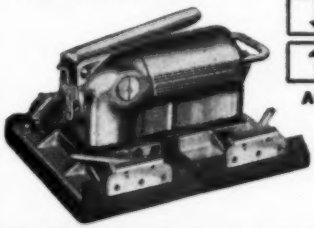
ONLY NATIONAL OFFERS A COMPLETE LINE

MODEL 600
Single-Pad . . . Air Driven

STRAIGHT LINE
ACTION

MODEL 300
Two-Pad . . . Air Driven

STRAIGHT LINE
ACTION



MODEL 400
Single-Pad . . . Air Driven

ORBITAL
ACTION

MODEL 500
Single-Pad . . . Electric

ORBITAL
ACTION

EASILY ADAPTED TO YOUR FINISHING METHODS

National Sanders can be adapted to your present finishing methods to speed production and yet give your product a distinctive appearance. We offer a wide selection of block sanders, one of which will fit your requirements. Whether you prefer orbital or straight-line action, single or double pads for rubbing or sanding, there is a National Sander for you.

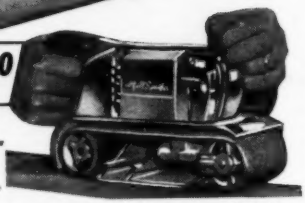
Write for Catalog today!

NATIONAL AIR SANDER, INC., 2822 Auburn St., Rockford, Ill.

Mall model 31 BELT SANDER

for SATIN-SMOOTH FINISHES

$79.50



No need to "bear down" for smooth, fast sanding.

This new ball bearing sander cuts wood finishing time to a minimum. The right side is flush for sanding next to upright objects. It's powered by a dynamic universal motor. No side plates or covers to unfasten for changing the 3" wide belt. Those are a few of its many outstanding features.

AT YOUR SERVICE

The MALL man in your area will be glad to give you a demonstration of any of the dozens of MALL tools used in woodworking. Phone or write our home office or the factory service warehouse nearest you (36 coast to coast.)

MALL TOOL CO. PORTABLE POWER TOOLS GASOLINE • ELECTRIC • AIR

7784 S. Chicago Ave., Chicago 19, Illinois

Send me more information about the MALL Model 31 Belt Sander.

*Name*_____

*Company*_____

*Address*_____

WU-159

3. To remove glue stains, blemishes, or similar prefinishing flaws

"Finish" sanding is primarily the preparation of an undercoat or topcoat to produce:

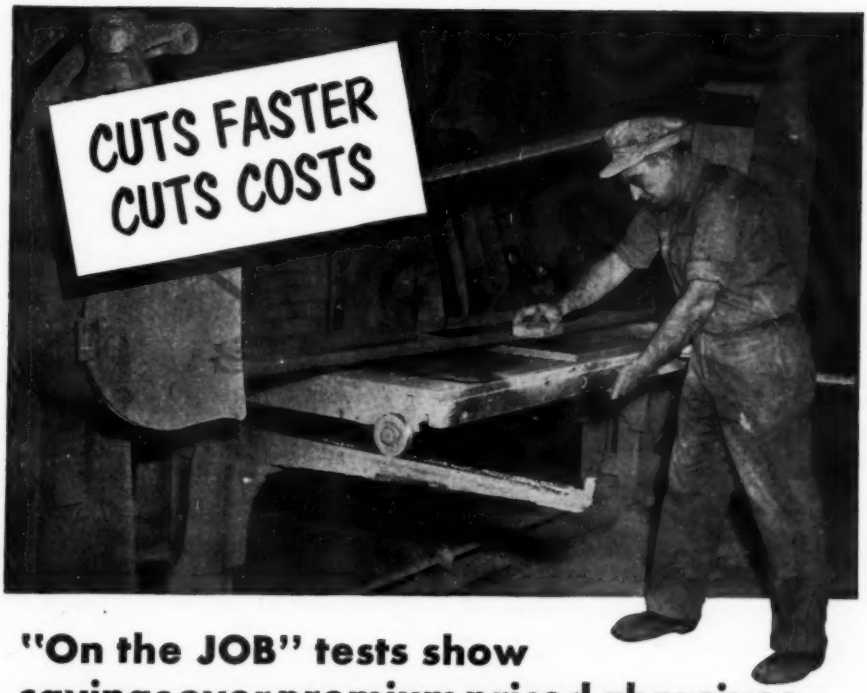
1. A uniform surface for maximum adhesion of a subsequent coating or waxing

2. A smooth clear surface with uniform refraction

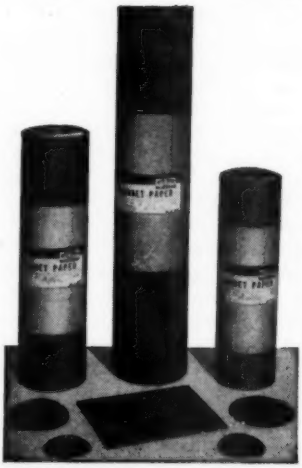
Sanding in the furniture industry, as we know it today, is a complex production operation using large machines employing coated abrasives. An understanding of the abrasive materials, grit and grit sizes, backing, method of deposition, and the machines is prerequisite to the problems of this phase of the finishing operation.

Since one of the most important factors in wood finishing is the control of moisture content, a brief discussion of moisture in wood is in order. In addition to the chemically bound water of the base molecules, water is held by wood in two ways. The "free water", or water found in the cell cavities, does not directly affect wood prcperties other than the weight. "Hygroscopic water" or the water held in the cell walls, is the moisture most difficult to remove and it affects the dimensional stability of wood. The amount of shrinking or swelling experienced with moisture changes in a piece of wood is extremely variable. Factors such as the density, the cell structure, the fibril angle, and the relative position of the wood section as grown affect variable dimensional stability in wood.

Wood shrinks from about one and one-half to two times more around the annual rings, tangentially, than it does across the rings, radially. Longitudinal shrinkage, or shrinkage along the grain, is very small in normal wood, but is extremely variable in tension and compression wood.



"On the JOB" tests show savings over premium priced abrasives...



...with MID-WEST RESIN SEAL GARNET

Customers tell us that "on the job" tests have proven Mid-West Resin Seal Garnet to be superior to other coated abrasives costing much more. That is why we urge you to make a test run with Mid-West and compare it with the brand you are now using.

Designed specifically for the woodworking industry, Mid-West Resin Seal Garnet material is made with medium or heavy weight paper and all cloth backings, and flexibilities in belts, sheets, rolls or discs . . . or in any other standard form.

Why not let us show you how we can cut costs on your sanding operations? There is a Mid-West field representative ready to serve you. Write us for his name.

MID-WEST ABRASIVE CO.
EXECUTIVE OFFICES:
OWOSSO, MICH.

MID-WEST QUALITY ABRASIVES

Plants in Owosso, Michigan and Rochester, Pennsylvania

FOR A MIRROR-LIKE FINISH YOU CAN'T BEAT DETROIT "TAC" RAGS

DETROIT "TAC" RAGS are an absolute necessity for cleaning any metal, wood or plastic surface before painting. Removes all dust, lint and sanding particles.
Order today through your supplier.
STANDARD OF THE FINISHING INDUSTRY SINCE 1934
DETRO MFG. & SALES CO., INC., CULVER CITY, CALIFORNIA

SPLICE YOUR OWN
ABRASIVE BELTS

Belts always ready to use

Reduce Belt costs

Low cost Econaway Splicer

Send for bulletin now.

AGET-DETROIT CO.
136 MAIN ST.
ANN ARBOR, MICH.

Wood changes its dimensions with changing atmospheric conditions. At a given relative humidity, the moisture content of wood and that of the atmosphere work toward an equilibrium. In most uses, finished wood products are exposed to variable atmospheric conditions. Consequently, wood has an accordion-like action, resulting in continuous stress between the wood surface and the finish.

Finishing tends to reduce the rate of moisture transmission in wood, but unless all surfaces are completely sealed, the relative dimensional stabilizing effect of a surface finish is of little consequence.

When a piece of wood is held secure by means of glue, screws, or other techniques of fastening, compression shrinkage occurs. If part of the outer surface is held in position, swelling of the wood due to an increase in moisture content results in increased internal dimensions rather than increased external dimensions. Then when the original moisture content is again reached, greater shrinkage can be affected, with the piece seeking lesser dimensions than were previously obtainable. Normal dimensional changes and compression shrinkage are problems best met by fabricating and finishing a piece of furniture at a moisture content approximately averaging the equilibrium condition at which it will be used.

Not only is it important to have the stock to be finished uniformly dried to the desired moisture content for use, but also to allow for proper wetting and adhesion of the finishing materials. An understanding of wood moisture relationships is requisite for control of a quality finishing operation. Humidity control in plants and finishing rooms would eliminate numerous finishing problems and the appearance of finishing defects after the product has reached the consumer's home.

WHY do so many shops prefer Belt Paper by CARBORUNDUM?

Find out by asking the man who uses it—or by using it yourself. Either way, you'll reach the same conclusion: dependably uniform sanding performance that you can count on...job after job, roll after roll...spells the difference. Next time you order Belt Paper—Garnet or Aluminum Oxide—for sanding flats, specify CARBORUNDUM® Brand. You'll agree it pays!

YOUR CARBORUNDUM DISTRIBUTOR or salesman is the man to call for expert counsel, prompt deliveries. Or write The Carborundum Company, Dept. WD 82-412, Niagara Falls, N.Y.

There is a product by CARBORUNDUM for every sanding and finishing operation...

Belt Paper and Cloth • Drum Paper Drum Combination • Waterproof Paper • Cabinet and Finishing Papers • "Nolap" Sleeves • Vonnegut Brush-Backed Sander Heads and Abrasive Assemblies... PLUS a complete line of Grinding Wheels and Sharpening Stones for your grinding department.

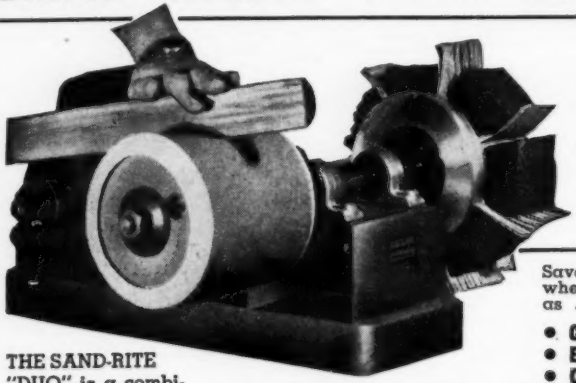
CARBORUNDUM

REGISTERED TRADE MARK

...continually putting more sense in your abrasive dollar

82-412

SAND RIGHT WITH SAND-RITE



THE SAND-RITE "DUO" is a combination Rotary Brush and Pneumatic Drum Sander that is highly versatile for use in every shop.

INCREASE SANDING PRODUCTION use a SAND-RITE "DUO" SANDER

Save time and materials when you sand such items as . . .

- CHAIR LEGS & ARMS
- BRUSH HANDLES
- CHAIR SEATS
- GUN STOCKS
- FURNITURE TRIM
- MOULDINGS

WRITE TODAY FOR CIRCULAR

SAND-RITE MFG. CO.

Dept. W., 226 W. Schiller St.
Chicago 10, Illinois

ReNew GIVES NEW LIFE TO SANDPAPER AND CUTS SANDING COST 50%

Keep your sandpaper cutting for you with ReNew. Apply . . . let it dissolve the pitch or resin . . . then brush it off with a scrubbing brush. It's so easy and quick and makes your sandpaper last at least 3 times as long.

ReNew increases sanding machine efficiency . . . paper lasts longer . . . less changes necessary.

ReNew is non-inflammable.

Buy it in 55 gallon drums at $2.85 per gallon, 5 gallon steel pails at $3.00 per gallon, or 1 gallon cans at $3.25 per gallon, F.O.B. Moline, Illinois.

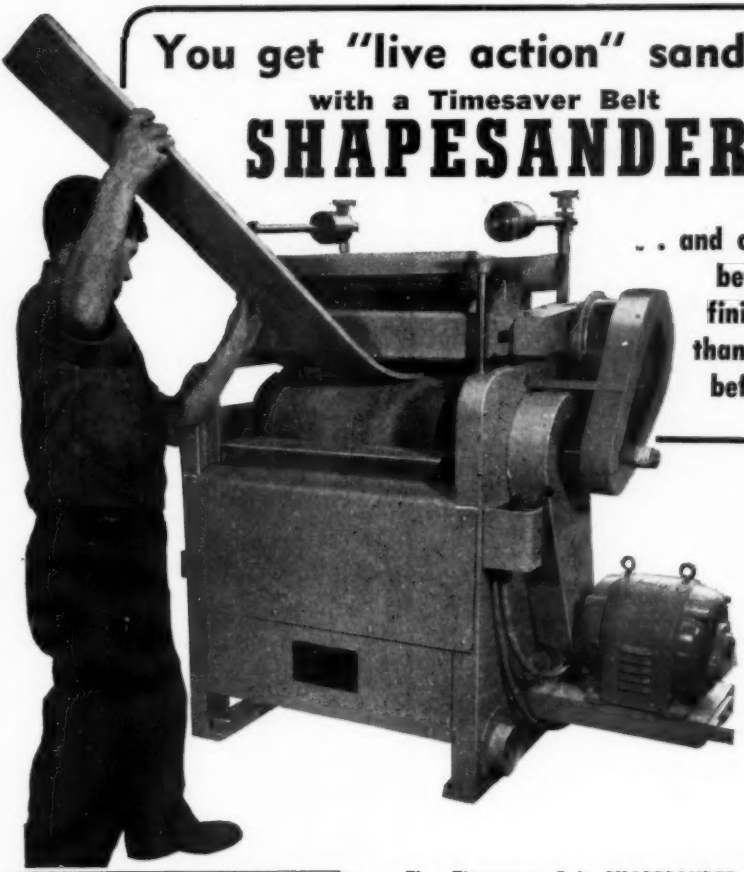
MOLINE PAINT MFG. CO.

MOLINE . . . . . ILLINOIS

You get "live action" sanding

with a Timesaver Belt

SHAPESANDER



. . . and obtain better finishes than ever before.

SAND ALL TYPES OF CURVED, SERPENTINE, TAPERED AND STRAIGHT WOOD STOCK . . .

Such jobs as Water Skis, Coat Hangers, Chair Rockers, Curved Chair Seats, Hand Sawn Handles, Tapered Chair Legs and Arms, Drawer Fronts, Cut-out Scroll Backs and straight and shaped curved pieces as small as ⅜" x 4" can be handled at tremendous rates of production.

The Timesaver Belt SHAPESANDER was engineered and designed to meet the growing need for faster production and superior finishes on all types of wood pieces used in the manufacture of furniture, display fixtures and other wood products. Tedious hand sanding can be completely eliminated on all sanding operations and as much as 80% of former production time can be saved. Actual production runs prove that finishes and results obtainable are comparable to, and many users report better, than any other sanding method in use today.

Write today . . . investigate the advantages of a SHAPESANDER and modern production techniques for your plant. Free Folder on Request.

TIMESAVERS, INC.

Mfr's of The Speedmoulder, Shapemaker, Speedripper and other "Timesaver" Machines

P. O. Box L, ROBBINSDALE 22, MINN.

FIELD
SINCE 19--

CHAIN MORTISE
CUTTING EQUIPMENT

A TOOL ROOM Product
By A Tool Room Expert!

Use our double bearing guide bars for flat bottom mortises. The riveted plate and bearing construction provides the utmost in strength and interchangeability. More than 90 standard and many special sizes of cutting equipment in stock. We are well-equipped to furnish special sizes like the above bar in many widths and lengths.

Write for complete information on our chain mortising equipment.

WILLIAM H. FIELD CO.
327 Dorchester Ave. Boston 27, Mass.

District Managers
WOOD WORKING DIGEST

EASTERN DIVISION
Dan E. Reardon, Vice-President
c/o Hitchcock Publishing Co.
55 West 42nd Street, New York 36, N. Y.
Telephone: LAckawanna 4-4528

NEW ENGLAND, EASTERN N. Y. STATE
Dan E. Reardon
Box No. 1, South Glastonbury, Conn.

NEW YORK METROPOLITAN AREA
Martin J. Gallay
Raymond J. Sietsema
c/o Hitchcock Publishing Co.
55 W. 42nd St., New York 36, N. Y.
Phone LAckawanna 4-4528

EASTERN PENNA., CENTRAL N. Y. STATE
N.J., MD., DELA., D. of C., BROOKLYN, N. Y.
Raymond J. Sietsema
c/o Hitchcock Publishing Co.
55 W. 42nd St., New York 36, N. Y.
Phone LAckawanna 4-4528
Home Phone: VErona (N.J.) 8-7520J

CENTRAL DIVISION
MICHIGAN, INDIANA, KY., WESTERN OHIO
Henry J. Smith, Vice-President
c/o Hitchcock Publishing Co.
222 East Willow Avenue, Wheaton, Ill.
Telephone: WHeaton 8-3400

ILLINOIS, WISCONSIN, IOWA, MINNESOTA, ST. LOUIS, MO., MEMPHIS, TENN.
James C. Stewart, Vice-President
c/o Hitchcock Publishing Co.
222 East Willow Avenue
Wheaton, Illinois
Telephone: WHeaton 8-3400

WESTERN N. Y. STATE, WESTERN PENNA., EASTERN OHIO
Ralph E. Helfrick,
1507 Edgefield Rd., Cleveland 24, Ohio
Phone HIllcrest 2-0189

WESTERN DIVISION
CALIFORNIA and ARIZONA
Keith H. Evans
3757 Wilshire Blvd., Los Angeles 5, Calif.
DUnkirk 8-2981

Keith H. Evans
Room 304, 593 Market Street
San Francisco 5, Calif.
Phone: YUkon 2-4280

OREGON and WASHINGTON
Lloyd Thorpe
604 Medical Arts Building
Seattle 1, Washington
Phone: Main 6827

HITCHCOCK PUBLISHING CO.
WHEATON, ILLINOIS
Telephone: WH 8-3400

FIRST CLASS
PERMIT NO. 272
SEC. 34.9. P. L. & R.
WHEATON, ILLINOIS

BUSINESS REPLY CARD

NO POSTAGE NECESSARY IF MAILED IN THE U.S.A.

3c POSTAGE WILL BE PAID BY

The EDITOR

WOOD WORKING DIGEST

WHEATON, ILLINOIS

FIRST CLASS
PERMIT NO. 272
SEC. 34.9. P. L. & R.
WHEATON, ILLINOIS

BUSINESS REPLY CARD

NO POSTAGE NECESSARY IF MAILED IN THE U.S.A.

3c POSTAGE WILL BE PAID BY

WOOD WORKING DIGEST

READERS' SERVICE DIVISION

WHEATON, ILLINOIS

SEND US FULL INFORMATION ABOUT THE WOOD WORKING DIGEST

★ AWARD OF MERIT CONTEST ★

Described In This Issue

No Firm Or Association Is Too Large Or Too Small To Be Eligible To Win

MAIL THIS POSTAGE PAID CARD - TODAY

Name .....

.....

Address .....

.....

By ..... Title .....

PRODUCT INFORMATION

A quick, free way to obtain information about the equipment and supplies you need to buy.

- Abrasives
- Adhesives, animal
- Adhesives, casein
- Adhesives, phenolic
- Adhesives, resin
- Adhesives, resorcinol
- Adhesives, urea
- Air Compressors
- Band Saw Tires
- Bits, auger
- Bits, dowel
- Bits, router
- Blowers
- Bolts
- Boring Machines
- Car Pullers
- Chisels
- Clamp Carriers
- Clamps
- Conveyors
- Cutters
- Dimension Stock
- Dowels
- Drill Attachments
- Drill Presses
- Drills
- Dry Kilns
- Dryers
- Dust Collecting Equipment
- Electric Sander Refinishers
- Files
- Finishes
- Glue Equipment
- Gluers, electronic
- Grinders, knife
- Grooving
- Guards
- High Frequency Heating Equipment
- Hose
- Jointers
- Knives, moulder
- Knives, planer
- Knives, shaper
- Knives, veneer
- Lathes
- Loader Hoists
- Lumber
- Machine Bits
- Machines, bending
- Machines, box & crate
- Machines, carving
- Machines, clamping
- Machines, door and sash
- Machines, dovetailing
- Machines, dowel
- Machines, filing & sharpening
- Machines, gluing
- Machines, mortising
- Machines, nailing
- Machines, sawmill
- Machines, saw setting
- Machines, screw driving
- Machines, stapling
- Matchers
- Moisture Meters
- Mortise chains
- Moulders
- Nails
- Packaging Material
- Paint
- Planers
- Plates
- Plastic Trimmers
- Plywood
- Presses, plywood
- Putty
- Reamers, hand
- Rippers
- Routers
- Safety Clothing
- Sanders, automatic stroke
- Sanders, belt
- Sanders, contour
- Sanders, disc
- Sanders, endless bed
- Sanders, portable electric
- Sanders, special
- Sanders, variety
- Sandpaper
- Saws, arbor
- Saws, band
- Saws, chain
- Saws, cross-cut
- Saws, cut-off
- Saws, gang
- Saws, portable electric
- Saws, radial
- Saws, rip
- Saw blades, band
- Saw blades, carbide
- Saw blades, circular
- Saw Guides
- Screws
- Shapers
- Shaper Collars
- Spray Equipment
- Stackers, lumber
- Surfacers
- Tackers
- Tenoners
- Transfer Cars
- Trucks, dry kiln
- Trucks, factory
- Unstackers, lumber
- Veneer
- Veneer Clippers
- Veneer Dryers
- Vises
- Washers
- Wheels
- Wood Treating Compounds

Data will come direct to you from responsible manufacturers. Your request involves no obligation.

Name..... Position.....

Company .....

Street .....

City..... Zone..... State.....

WOOD WORKING DIGEST

FEBRUARY, 1955

CIRCULATION DEPARTMENT
WHEATON, ILLINOIS

SUBSCRIPTION FORM

To receive WOOD WORKING DIGEST regularly, fill in below and mail this card today.

- ☐ 1 Year (12 Issues) $3.00
- ☐ 2 Years (24 Issues) 5.00
- ☐ 1 Year (Canada & Foreign) 4.00

- ☐ Check Enclosed
- ☐ Bill Company

Name ..... Position .....

Company .....

Products ..... No. of Employees.....

Street .....

City ..... Zone..... State .....

WOOD WORKING DIGEST

MARKET SERVICE

Without obligation please send more information and literature on the items shown on the pages indicated from the _____ issue of WOOD WORKING DIGEST.

Product	Page No.

Company _____ Title _____

By _____

Address _____

City _____ State _____

FIRST CLASS
PERMIT NO. 272
SEC. 34.9, P. L. & R.
WHEATON, ILLINOIS

BUSINESS REPLY CARD

NO POSTAGE NECESSARY IF MAILED IN THE U.S.A.

3c POSTAGE WILL BE PAID BY

WOOD WORKING DIGEST

CIRCULATION DEPARTMENT

WHEATON, ILLINOIS

FIRST CLASS
PERMIT NO. 272
SEC. 34.9, P. L. & R.
WHEATON, ILLINOIS

BUSINESS REPLY CARD

NO POSTAGE NECESSARY IF MAILED IN THE U.S.A.

3c POSTAGE WILL BE PAID BY

WOOD WORKING DIGEST

READERS' SERVICE DIVISION

WHEATON, ILLINOIS

Note how the brushes force the abrasive cloth down into the grooves.

Sand-O-Flex is being used for finishing spiral lamp stands.

Used portably, Sand-O-Flex sands intricate parts without "flatting" contours.

13,000 sanding strokes a minute

on curved, irregular wood surfaces

Sand-O-Flex gets in and around complicated parts where no other sander can reach. The tedious jobs formerly done by hand are now successfully sanded at top speeds.

Model 650C (above left) consists of 12 abrasive strips backed up by 12 replaceable brushes attached to a metal wheel. As the wheel spins the brushes mold the garnet cloth to the work shape, and when rotated at the usual motor speed you get 13,000 sanding strokes per minute! Compare that with any other form of contour sanding.

The abrasive strips feed out from a central magazine. Refill cartridges are supplied in a wide range of grits, from coarse to very fine, for all types of sanding. Easily loaded—no looping, gluing, or fastening ends. By changing to aluminum-oxide abrasive cartridges, Sand-O-Flex may also be used for finishing metals, plastics, rubber and other materials.

Sand-O-Flex is an attachment, fits your present power tools, portable or stationary. No need to buy stands or special equipment. Four models now available—from light duty to heavy production-line runs.

There is a job for Sand-O-Flex in every woodworking shop and there is a Sand-O-Flex sander for every job. See your abrasive supply dealer for a demonstration—or write for catalog and prices.

MERIT PRODUCTS, INC.
4023 Irving Place, Culver City, California

Manufacturers of SAND-O-FLEX and GRIND-O-FLEX abrasive tools

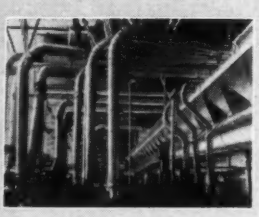
complete flexibility
outstanding efficiency

KIRK and BLUM
"Plenum Main" Dust Control

The many advantages in Kirk & Blum "Plenum Main" dust control are proven by a steadily mounting total of installations in leading woodworking plants.

The "Plenum Main" permits relocation of machinery at will without overloading or unbalancing the dust collection system. It allow the ready addition of extra fan capacity when needed or the reduction of fan capacity without affecting the balance of the system needed for operation. With all these advantages, the "Plenum Main" offers exceptional efficiency.

An old dust collecting system may be wasting substantial amounts of power, limiting production and handicapping operations in your plant. For a free survey of your dust control equipment and needs, write to: *The Kirk and Blum Mfg. Co., 3121 Forrer St., Cincinnati 9, Ohio.*



KIRK AND BLUM
DUST CONTROL SYSTEMS

How FIRE PROOF is your factory?

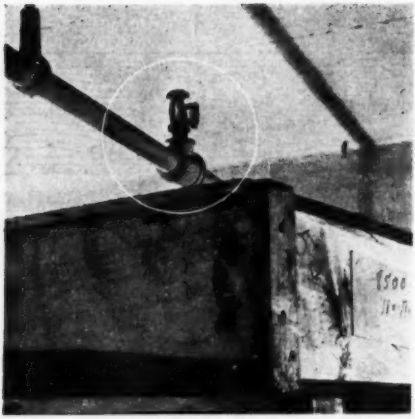
BY H. H. CONNELLY

IT was Sunday evening two hours before midnight. Most folks were thinking of going to bed, hoping the hot summer night would soon cool. One hundred employees of the local flooring plant were among those fighting the heat, little dreaming that within an hour a greater heat than that from the sun-scorched pavements would wipe out their jobs and security for many months to come.

Two minutes past ten the fire siren screamed and people curiously searched the sky line for signs of red. A police car screamed and pointed the way for the volunteers to follow. By ten-thirty the streets surrounding the flooring mill were choked with people eager to help, but driven to safety by the searing flames from dry oak lumber and finished flooring. By eleven the building that had housed a hundred jobs was embers and a mass of twisted machinery. And a hundred workers shook their heads and asked. "How did it happen?"

It happened from faulty wiring, discovered by the night watchman, who was helpless to prevent its spreading without the quenching rain of a sprinkler system. The irony of the story is not that it caught and burned, but that this was the third time fire had broken out, and from the same cause! However, before a crew of men had been on duty to stem the flames. Why hadn't precautions been taken after the first two warnings? The wiring corrected, the rubbish removed? Insurance, according to the owner, was prohibitive. The rates were too high. A sprinkler system was too costly. One had been discussed the week before, but ten thousand dollars seemed too high. The loss of property that night would have installed ten sprinkler systems.

The moral of this story is not to trust Lady Luck unless you follow the first principles of fire prevention. For where plant fire safety is recognized as an



Courtesy National Safety Council.

Fire precautions have been taken in providing a sprinkler system. Blocking of head here makes it ineffective, however.

important part of production and, as such, is highly developed and scrupulously maintained, there is a virtual immunity from fires sufficiently severe to close down the plant or even a part of it. Small fires are infrequent and when they occur are expertly handled.

Fire prevention is the responsibility of management. For the damage to even a small portion of a woodworking factory can disrupt production throughout the entire line. There are more serious results, however. Employees thrown out of work are forced to take other jobs, a disrupted production team that, in some instances, had taken years to train. Orders go unfilled. Customers are disappointed and turn to competitors. You may get them back and again you may never sell to them again. No form or amount of insurance can replace lost customers, lost time, lost effort and lost lives.

Who Is Responsible?

Today, an industrial plant well equipped to fight a factory fire is useless if the human element fails. The problem is to guard against such failures. Who is responsible?

The watchman could smell propane gas as he made his rounds of the warehouse. He knew it was gas, highly inflammable and destructively explosive if ignited. But he passed it by. Why? Because the odor had been in that area for weeks and no one had taken the trouble to investigate and report the danger.

The propane was leaking from a corroded pipe and entering the building through the porous ground surrounding the buried water main.

Shortly after midnight an electric heater sparked the gas into life and the darkened warehouse was lit with flames. A hand extinguisher was futile and he was driven from the building. He ran for help, sure that the sprinkler system would go on any second. Help arrived but the sprinkler heads were already melting from the pipes. Weeks before someone had closed the sprinkler valve to correct a mechanical fault in the dry pipe valve and forgot to open it again.

At seven o'clock the next morning the factory was a mass of rubble. Nearly two million dollars in goods destroyed. Who was to blame?

Responsibility starts at the top. In this fire the human element failed in not realizing the importance of keeping the sprinkler valves open. It failed in not taking warning at the first indications of explosive gas. But the first failure was management.

"But how could I be at fault? I wasn't there to shut off the valve. I wasn't there to sound the alarm. I didn't smell the leaking gas," management complained.

What Management Can Do

First of all, management can insist upon a clean house. He walks through the factory occasionally.

Cleanliness and orderliness are without question the one single factor of

Fire wagon which has been built by employees of the locomotive shops of the Reading Railroad. Extinguishers, gas masks, safety rope and many other emergency items. Fire blanket is so packed that it is instantly available by merely pulling cord.

Courtesy National Safety Council.

fire prevention most stressed by insurance people.

Fire needs fuel. It needs a starter. The woodworking factory can be a virtual kindling pile if not kept clean. Fine collections from sanding belts, are actually explosive under the right conditions. Kiln dried shavings, blocks, finishing materials and oil are almost uncontrollable when given a flaming start.

Insist upon daily cleaning around machines that aren't adequately provided with dust collecting hoods. Planers, shapers, and sanding machines should all be provided with suction pipes to carry the dust to the boiler room or refuse pile.

See that overhead pipes and beams are frequently blown down.

Not long ago the wood chipper in a furniture factory caught fire and the racing sparks settled along the overhead girders and beams. In a matter of minutes the entire upper structure was burning. Dust from the chipper and planers had accumulated to a depth of two inches and was powdery dry.

The fire from the chipper was extinguished in a few minutes, but it took over an hour of intense fighting to save the building. Cleanliness would have prevented this near ruin. Only management can insist and expect cleanliness and orderliness.

Checks Management Can Make

Are you sure the watchman isn't sleeping when he should be patrolling the plant for possible fires. (1) Check clock records daily. (2) Are your night watchmen, watchmen because they are old and broken down employees who are not physically able to handle a rip saw? Good health and unimpaired senses are essential. A watchman must be able to smell smoke, hear running water, spewing gas and physically able to take the first steps of extinguishing the flames. (3) Do your watchmen know the plant layout and the various processes performed in your factory? A watchman should know the location and function of the various valves, extinguishers and doors he would be called upon to operate in case of a fire. This would include stairways, elevators, doors and windows. Another important function of management is to see that watchmen have sufficient instruction regarding electrical equipment to handle switches and fuse boxes, to shut off the electric current when needed. (4) Designate periodic dates for instructing watchmen and firemen in the techniques of operating the sprinkler system and

Courtesy National Safety Council.

Circular saw and debris illustrates how easily and quickly scrap and waste material can accumulate. Good fire prevention methods must take this into account.

special fire fighting equipment. (5) Require instruction periods on common ways fire may start; hazardous conditions to look for—poor housekeeping, for example. Other hazards a watchman should be on the lookout for are oily rags, defective wiring, and dangerous heating devices. (6) Know that all watchmen can turn in a fire alarm and that they know what plant official to notify in an emergency. (7) Provide your plant with the best in fire fighting equipment. A sprinkler system, extinguisher, hose and last but not least, an efficient voluntary fire brigade.

Don'ts For Handling the Automatic Sprinkler System

A factory steam valve, left open by accident, ignited the residue in a soap flake processing tower. In a matter of seconds, six sprinklers were in action and had the fire under control. When the fire was considered out, the sprinklers were shut off. And those in charge didn't take the trouble to re-open the sprinkler valve. Later the fire rekindled and did severe damage because the sprinklers were useless.

Immediately after every fire check all sprinklers. Replace all open heads and turn water on again.

How effective the sprinkler system operates in times of fire is found in 24,919 case studies by Factory Mutual. All these reported fires had sprinkler protection. Over 18,000 of these fires were extinguished by the sprinklers above or held in check till employees could extinguish the flames with hand equipment.

In one case history a failure of the sprinkler system was attributed to an excited employee turning off the sprinkler system before the fire was under control.

To prevent closing of valves by unauthorized persons, station a fireman at each valve controlling the sprinkler systems which are operating.

Fire In The Dust Collecting System

You'll find one in every woodworking factory. They are not only effective removers of dust and shavings from planers and molders, but they are a means of keeping the plant clean and free of choking dust.

Dust mains frequently catch fire too. What should you do when this happens?

Not long ago an oak sliver became wedged between the straight line rip saw and the frame. Intense heat was soon generated from the friction of the saw and wood. In a matter of seconds the dust pipe leading to the main was red hot. The solder was melted from the joints and for a few minutes a major fire was in the making.

The first thought was to close down the fans. A level headed foreman saved the day by permitting the fans to run. The flame was soon sucked through the main and carried to the outside where it subsided for lack of fuel.

If the draft had been closed, the fire would have remained in the dust main

MORE ENGINEERING
MORE EFFICIENCY
MORE EXPERIENCE
MAKE THE DIFFERENCE

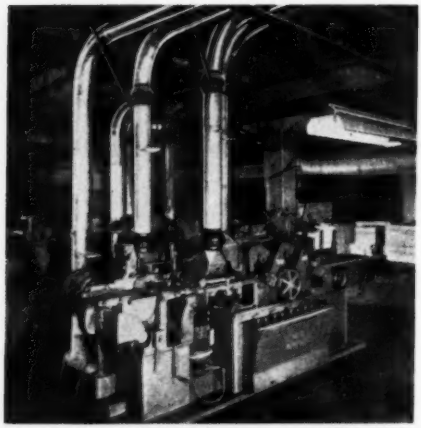
Remove Dust and Fumes at their source with a Young & Bertke round-the-clock system. Guard Health . . . control Occupational Hazards and protect the Speed of today's giant machines with clean, dust-free air. Dust threatens everyone . . . its effect is devastating . . . causing breakdowns, wasted time, operating hazards and spoilage. Efficient Dust and Fume Controls . . . for all types of industry can be solved because Young & Bertke's MORE ENGINEERING . . . MORE EFFICIENCY . . . MORE EXPERIENCE . . . "MAKE THE DIFFERENCE".

New Systems installed or present systems modernized. Write today.

The **YOUNG & BERTKE** Co.

DUST and FUME CONTROL • OVENS • SPRAY BOOTHS

1122 BUCK ST. CINCINNATI (14), OHIO



Young & Bertke equipment providing piping to a four sided molder. Flexible ball joints and large radius streamlined elbows are part of this well planned installation.

where it would have smoldered and very likely created an explosion from the mixture of powdery dust contained in the system.

It goes without explanation that dust collecting systems must be carefully designed, or serious fires or explosions can result. Adequate ventilation will relieve the explosive pressure of fine wood dust.

Another observation—dust systems must be arranged without sharp turns; or dead spots that permit dust to accumulate. Ample clean-out openings should be provided in the main. Look for an accumulation of pitch. In the instance described above, it was found that the major cause of the quick fire was an accumulation of pitch from sawing pine.

Fire Protection For The Finishing Room

The fire hazards are multiplied because of the inflammable varnishes, shellacs, paints, etc., which they contain. Consequently, an ounce of prevention here at the source of a fire hazard is worth a pound of cure.

The first information every finishing room should have is a definite knowledge of the flash point of the finishing material. This is the critical temperature at which a substance will burst into flames. Once a solvent has reached this temperature it bursts into flames at the least provocation. The static sparks produced by running a comb through the hair is likely to send the whole "shebang" into flames the same as an ignited match.

The innocent spark made by letting an iron scraper strike a tank caused a fire that consumed many gallons of paint and the finishing room of one factory. No special precautions had been made to install sprinklers.

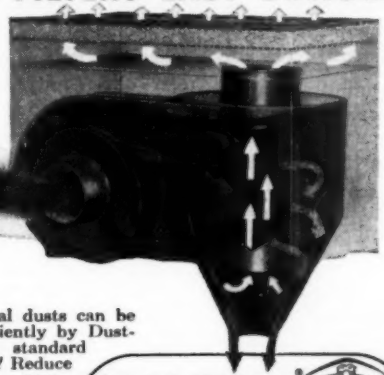
A welder welding an overhead conveyor resulted in the loss of a furniture

Exhaust system of dust control equipment installed at the Kroehler Manufacturing Co., Binghampton, N.Y.

Courtesy National Safety Council.

CYCLONE SEPARATION

FOR MORE EFFICIENT DUST COLLECTION —FILTERS LAST LONGER



Almost all industrial dusts can be collected more efficiently by Dustkop. Thirty-seven standard models *ready to use!* Reduce installation costs — save space. Write for descriptive literature.

ALSO A COMPLETE LINE OF MIST COLLECTORS

AGET MANUFACTURING COMPANY
1382 EAST CHURCH ST., ADRIAN, MICH.

plant. A molten glow of metal from the cutting torch bounced along the floor and into a tank of solvent.

As soon as the fire started, workers attacked the flames with a foam extinguisher. The flame was completely covered with foam and was on the way to being extinguished when an excited workman improperly used a soda-acid extinguisher on the flames. The foam dissipated and the flames began anew. With all the foam exhausted by this time the crew was helpless to control the developing heat. The overhead sprinklers went into action and the water filling the tank forced the light combustible liquids to the top, covering the floor with fire.

Water, from the plant mains, pumped into the flames by the city fire department soon exhausted the sprinklers' supply and the fire ran wild.

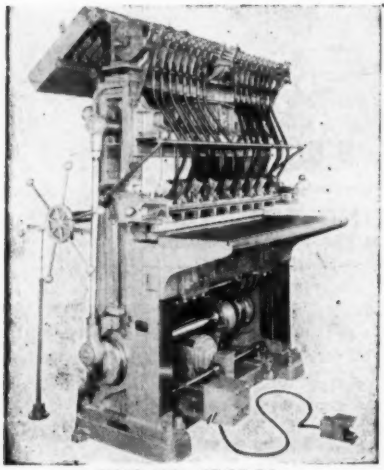
Fire Equipment Essential

The importance of adequate and efficient fire fighting equipment cannot be overemphasized. The sprinklers have already been mentioned in detail. Second, ample hose and see that it is conveniently located. A few weeks ago sparks from a welder dropped from a scaffold and landed in a barrel of collected waste from the finishing room. Unnoticed for some time, the barrel was a smoldering pile of rags when finally discovered. Plant employees laid a small hose line to the fire and soon had it under control. If it had been necessary to wait for the regular fire department, it could have been too late.

Third, have ample extinguishers in every work area. These extinguishers should be the type suitable for controlling fire of finishing materials and known solvents. A foam extinguisher smothers the fire by excluding the oxygen and soon brings it under control.

It is now possible to use dry chemicals for fighting fire. One company has on the market a dry chemical extinguisher actuated by pressurized nitrogen. You can locate these extinguishers strategically in danger zones and when heat occurs in the vicinity, sensitive elements actuated by expanding air that goes with the higher temperatures, release nitrogen stored under pressure. The pressurized nitrogen immediately goes to work to scatter the dry chemical compound over the fire through distribution heads.

It is recommended for the protection of areas using inflammable liquids such as spray booths, dip tanks, storage, etc. Controls can be added to even stop the operations by closing off the current. They can be used to drop lids on dip tanks, empty the tank, close ventilation, shut off valves, and a dozen necessary operations that if left to a frightened man might not be done.



DOIG NO. 45-20-16

THOUSANDS OF PROBLEMS HAVE BEEN SOLVED BY

DOIG AUTOMATIC NAILERS

Standard Doig Features

1. Anti-friction bearings.
2. Three separate motorized drives.
3. Nail feeder to handle nails from 1 to 3 inches without additional parts required.
4. Nail feeders to give 12 separate nailing combinations.

NEW FEATURES

A. Wheel on left allows operator to adjust back gage from operating position.
B. Solenoid trip permits operator to trip machine at any position desired.

WRITE TODAY. WE INVITE YOUR REQUESTS FOR FULL DETAILS

WILLIAM S. DOIG Inc.

DEPT. 312 — 894 MANHATTAN AVE., BROOKLYN 22, NEW YORK

It's The Performance You Get From Wysong Dovetail Bits That's Most IMPORTANT!

A long life of accurate, clean cuts is what you get with *Wysong Dovetail Bits!* Precision made from carbon or high-speed steel, and individually hand finished. They are economical to buy and continue to save you money by standing up under continuous hard use.

WYSONG

DOVETAILERS • MORTISERS • SANDERS

WYSONG and MILES COMPANY

Dept. DB, Greensboro, N. C.

Reduce Costs by assembling your products easier and stronger with "Rockford" Quality Controlled Threaded Fasteners.

We manufacture a complete line.
- Cap and Set Screws
- Socket Head Cap and Socket Set Screws
- Studs
- * Machine Screws and Stove Bolts
- Nuts — Square & Hexagon
- * Wood Screws and Drive Screws
- * Sheet Metal Screws
- Carriage Bolts
- Specials
- Aircraft Screws & Bolts
- * Made in Slotted or "Rockford-Phillips" Heads

"Quality Controlled Products"

"ROCKFORD" Screw Products Co.
2501 S. Ninth Street
ROCKFORD, ILLINOIS
Phone: 4-9441 or Teletype: RK 88

Helpful 56 page book FREE

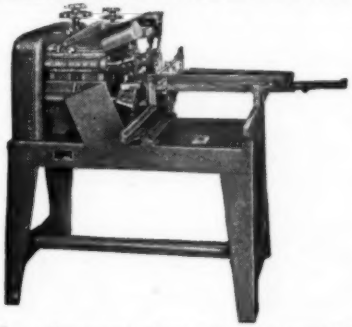
if you use saws, send for this book

This free book is based on experience of Foley precision saw filing equipment in thousands of plants. Contains pictures and data showing how firms have increased production 25% to 40%, lengthened saw life, reduced breakage. Book shows how automatic sharpening can benefit you. Request Manual No. 100—no obligation.

FOLEY MANUFACTURING CO., 3351 N.E. 5th St., Mpls. 18, Minn.

HARRIS

DELUXE FLOOR MODEL TENONER



New adjustment allows exact and simultaneous adjustment of tenon spindles.
3 H.P. Motor
3 Inch Blades
V Belt pulley drive on both tenon and cope spindles.
Heavier Construction for greater accuracy.

MILLBURY MACHINE COMPANY
13 WATERS STREET, MILLBURY, MASS.

You can secure the same unit mounted on wheels with 50 feet of rubber hose for directing the chemical to the danger zone. The carriage, with dry chemicals and nitrogen cylinders, is balanced to permit one-man operation.

Spontaneous Combustion

Few realize that the very ingredients with which they are daily working in the finishing room are potential powder kegs, containing paints, solvents, lacquers, and varnishes, that if fired would transform a peaceful working area into a blinding devastating furnace. This is unquestionably true, if the few precious minutes at the start are wasted in panic.

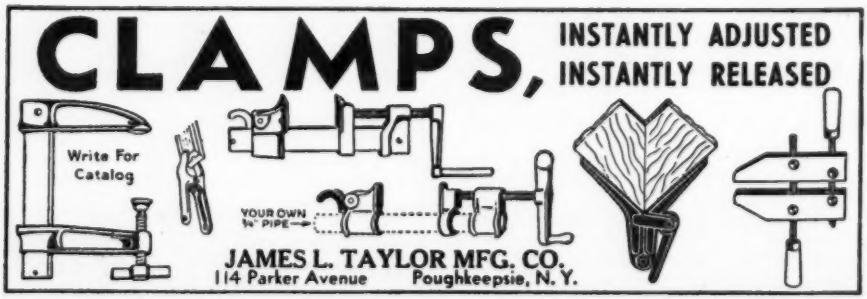
The finishing room that has not faced the horror and ruinous results of fire is fortunate. There is danger, however, after years of operation without the misfortune of a fire, that laxness and complacency will creep into the organization, resulting in one fatal misstep because we went to sleep at the post. Sometimes a small fire if controlled in time will prove beneficial. It will double the vigilance and make the personnel acutely aware of the immediate dangers of laxness and magnify the importance of all seemingly useless precautions of the past.

For the finisher who is using lacquer, several pertinent facts should be stressed for safety measures: (1) The basic ingredient of lacquer is nitrocellulose, the same material used to make explosives. It is highly combustible. (2) The solvents used to dissolve nitrocellulose have a low vapor point and as such are extremely inflammable.

Wise steps will avoid unnecessary fire hazards, if taken in time, and explained to the men operating the equipment and handling the material. This should be stressed from the viewpoint of their own safety as well as the safety of the plant and their jobs, since most humans are conscious of safety practices only insofar as they are closely affected. By expressing the personal angle: "I'll be hurt," or "I'll burn down my job," the individual is made conscious of the dangers close to his own bread and butter.

With the best of equipment, however, fires are inevitable if proper supervision of the men's working habits and department cleanliness are not constantly supervised and checked.

Periodic inspection by committees, preferably from other departments, will keep the supervision awake to any complacency. There are four points that if watched carefully will strengthen immeasurably the chances of preventing a fire. (1) See that all containers are emptied daily. (2) See that spray booths are properly lined with a material easily torn out and replaced periodically. Material found very satisfactory by several



finishing concerns is a corrugated paper secured in rolls. It is heavy enough to have body for handling and yet economical to install. (3) See that work aprons are spread out on benches for drying and not left in a wad or packed away when not in use. (4) See that department floors are swept daily and walls and ceilings cleaned regularly. Dust collecting at these points is an explosive hazard when the right conditions occur.

S.H.P.I. CONVENTION SET

The annual meeting of the Southern Hardwood Producers, Inc., will be held on Thursday and Friday, March 10 and 11, 1955, at the Roosevelt Hotel in New Orleans. The National Lumber Exporters Association, meeting in conjunction with S.H.P.I., will convene on Wednesday afternoon, March 9, 1955.

L. J. Heatherly, association secretary-manager, has announced that the final details of the program are nearing completion and will be made public shortly. Continuing the policy of recent years, the meeting will cover not only the national situation of interest to hardwood manufacturers, but will also devote considerable time to subjects directly related to the production and sale of southern hardwoods.

An outstanding attraction of the meeting will be the third annual presentation of the "Hardwood Industry Man-of-the-Year Award". Last year the beautiful red gum plaque was presented to Lee Robinson, Mobile River Saw Mill Company, Mt. Vernon, Alabama. The first award winner was John B. Veach, president of the Hardwood Corporation of America, Asheville, N.C. The 1955 winner of this award will be announced at the President's Banquet which will be held on March 10, 1955.

Let the other fellow talk occasionally. You can't learn much listening to yourself.

C.I.T. Terms Available
Write for bulletin and details

JACKSONVILLE BLOW PIPE CO.
Jacksonville, Florida
P. O. Box 3687

The Marvelous Montgomery

BLO-HOG (The only all-purpose hog in the world) Patents Pending

EATS UP EVERYTHING

. . . including Pine, Oak, Gum, Hickory, Elm, Cedar, Wet Veneer and Sandy Bark. Conveyor-fed — no attendant required. Positively protected from major damage by tramp steel. All connections locked — nothing to shake loose. Maintenance costs unbelievably low.

". . . Dear Mr. Montgomery: It is an unbelievable machine and it is still hard to believe that it is actually handling the enormous volume of scrap we are feeding into it. We operate the hog without an attendant—which means a considerable saving." — J. B. BLACK, Ocala Mfg. Co., Ocala, Fla.

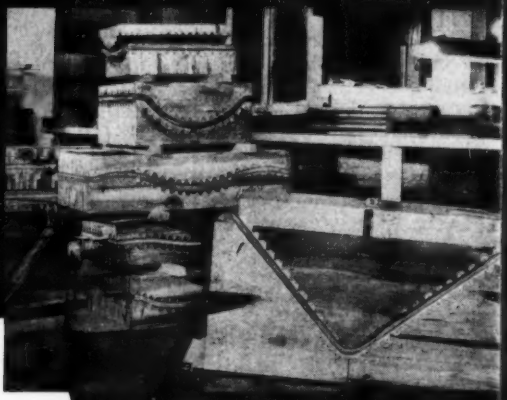
Sumner Iron Works, Everett, Washington, W. Coast Rep.
Canadian Sumner Iron Works, Ltd., Vancouver, B.C., Canadian Rep.

SPECIAL SHAPES with **INEXPENSIVE DIES**

with **Columbia**

DOUBLE DUTY

HI-FREQUENCY PRESSES



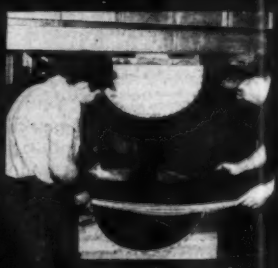
BETTER MOLDED FURNITURE AT LOWER COST

You can turn out laminated bent forms with a Columbia Hi-Frequency Press, using low-cost, metal-faced wooden dies that can be made in any shop. The fast, simple operation gives high production from a single set of dies; eliminates storage for curing. For double versatility, the same press can be switched over quickly to conventional cold press work.

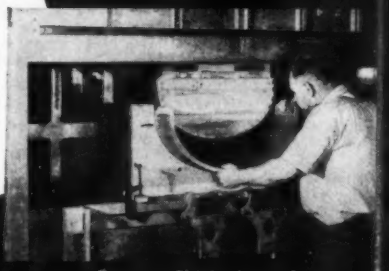
Open a new field of profitable production. You can produce laminated bent forms such as chair seats and backs, case goods fronts, cabinets, etc. at low cost and high speed.

Columbia Hi-Frequency Presses meet all FCC and safety regulations.

Write for new FREE Bulletin No. HP-3



Insert glued pack



Remove finished panel

Start curing cycle

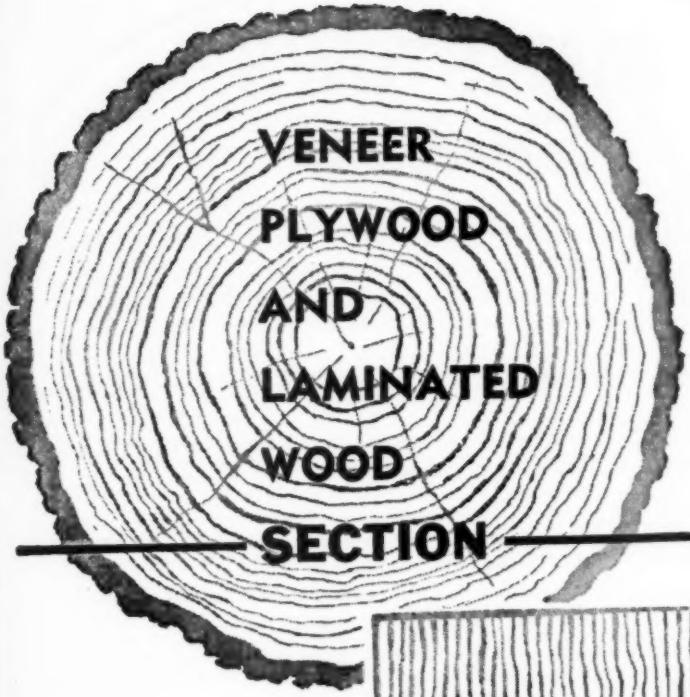
Columbia

DIVISION

THE LODGE & SHIPLEY CO.

HAMILTON 4, OHIO

BUILDERS OF ALL TYPES OF PRESSES FOR THE WOODWORKING INDUSTRY



Features . . . .

Plywood Is Better

No One Rash Enough

Extra Light Laminates

JAMESTOWN *Specials*

SPECIALLY ENGINEERED cut-to-size KITCHEN CABINET DOORS—Always have been and still are GUARANTEED FOR QUALITY.

BAL-CO-PLY non-warping door stock—engineered for cabinets and furniture parts that require a practically WARP PROOF plywood.

JAMESTOWN A GRADE BIRCH—skillfully matched for grain and color.

JAMESTOWN NORTHERN RED OAK—we select and cut our own veneers.

JAMESTOWN CHAUTAUQUA COUNTY NATURAL Hard White Maple.

. . . also WALNUT, MAHOGANY, RIFT and PLAIN WHITE OAK, CHERRY as well as other NATIVE and EXOTIC woods.

any of the above in all standard thicknesses with lumber, fir or veneer core.

PRIDE & PLYWOOD

Commodities of all kinds are offered at prices ranging from the sublime to the ridiculous. Plywood is no different than other commodities in this respect.

We feel that the consuming public still wants the BEST and takes real PRIDE in ownership of the BEST.

JAMESTOWN VENEER and PLYWOOD CORP.

Jamestown 2, N. Y.

JAMESTOWN
HOT PRESSED RESIN BONDED
Multiplied Strength
PLYWOOD

minimum prices may be had on quantities of 100 of size and kind, in truckload or carload lots.

PLYWOOD *Is Better....* Displays Beautiful Wood Figure

By **Thomas D. Perry**

THE advantages of plywood so far discussed in this series, have related largely to the physical characteristics of plywood, size, strength, non-swelling, non-warping, etc., and have been decidedly technical. The next several articles will emphasize the display of the attractive characteristics of wood, as they are enhanced by the assembling of several layers of veneer into plywood.

Figured Solid Wood Will Crack and Warp

Beautiful and attractive wood figure often comes from natural growths, at a crotch or in the stump or root, where nature has added strength by interlocking the fibers, more popularly known as crossgrain effects. These can seldom be used as 4/4 solid boards because the areas are limited and of irregular shape. Furthermore such 4/4 boards, if available in suitable sizes, would check and warp excessively, due to unpredictable stresses that are bound to develop as moisture changes occur in drying and in service. Such deformations are sometimes noted in antiques, made before the use of plywood was developed.

However, if such attractive wood growths are sliced into thin (1/28") veneer to minimize these stresses, and reinforced by supporting layers of plywood, they become stable and encourage the display of remarkable wood beauty. The veneers themselves are very fragile, and are usually 2-plied on straight grained veneer backings, to permit safe handling during the various steps required to trim and assemble them into plywood. Hence, plywood not only facilitates the use of such unusual growths and improves their durability, but it also reveals wood beauty that otherwise could not be enjoyed.

Plywood Greatly Increases the Yield of Choice Woods

Another instance of the desirability of plywood constructions in furniture, in contrast with solid wood, is the increased yield that plywood provides in boards that are reasonably straight grained and can be acceptably used in either solid or plywood constructions. At least 1¼" of wood is utilized in sawing a board from a log, including the wasted saw kerf. This same amount of wood could be sliced into 1/28" veneer and produce 35 sheets. The argument, therefore, is that only one customer could enjoy a table with a striped mahogany top of solid wood, while 35 customers could have that privilege if the tops were made of plywood, with precisely the same attractive face. Whether the plywood top would be cheaper than the solid top involves labor and material costs which are variable. As a general rule the plywood would be slightly cheaper, depending on the species used in the several layers, and the volume of production.

Plywood Construction Reinforces Fragile Veneer Faces

The inference which many make, and which is supported by some erroneous

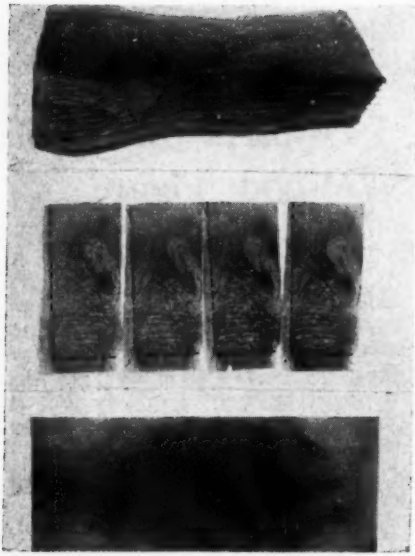


Fig. 1. Progressive steps in matching walnut stump veneer. Upper: original flitch as sliced, and after drying. Center: trim markings for matching on the dotted lines. Lower: four-piece matching after assembly into plywood.

dictionary definitions, is that the more beautiful veneer is used in plywood to conceal an inferior species of wood. This is a perversion of the facts. This viewpoint entirely ignores the fact that both outer and inner layers serve a definite purpose. The real explanation is that thin and/or fragile face veneers must have the reinforcement of sturdy supporting layers to make them serviceable. Take as an example a lumber core, which has no beauty but is stiff and strong. It is employed as a rigid base for the fragile face veneer in order to achieve stability in the plywood. In other words, the veneer expresses beauty while the lumber cores and crossbands supply the needed strength.

Matched Veneer Faces

There is another factor which strongly favors plywood techniques for revealing the beauty of wood—that of matching or balancing the figure characteristics of the wood. Attractive wood figure is almost always unsymmetrical and, in its original form, often presents an "out-of-square" or unbalanced appearance. Two adjacent 4/4 boards are not enough alike to permit the matching of grain figure, but two adjacent sheets of 1/28" veneer are almost identical and can be skillfully matched to balance each other in appearance.

An example of such matching in a highly figured walnut stump, or butt, is illustrated in Fig. 1. The upper photo shows the entire flitch of 1/28" sliced veneer, with its light and dark shadings of interesting grain figure, but of distinctly irregular shape. An expert veneer man will mark and clip these stump veneers, in packs of four, on a guillotine cutter along the dotted lines, shown in the central photo, being sure that the corners are exactly square. The apexes of these corners will be found to have the same grain figure and will form the center of the 4-piece matched face shown in the lower photo. These four clipped faces will be turned, like the leaves of a folded book, endwise and sidewise to make the complete pattern. And usually spliced together with gummed tape, which will be sanded off the finished plywood. Since these faces, after taping, are still fragile, and easily broken, many plywood factories will make a preliminary 2-ply gluing of these taped units, using a 1/24" poplar or birch back. Tego film glue, set under heat, is the best adhesive for this reinforcing, since it "strikes through" very little, if at all, in the hot pressing stage. Such 2-ply veneer faces, when trimmed to size, are easily handled through the plywood assembly with no hazard of breaking or cracking. In such 4-piece matched plywood panels, the final trimming to size must be done with care, using a center gauge to be sure the two halves are equal on each

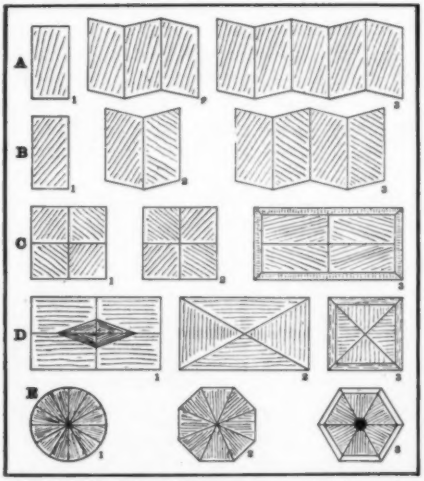


Fig. 2. Methods of veneer matching. A: slip matching, without turning; B: book matching, turning each alternate sheet; C: four-piece matching, for plain figured veneer; D: types of diamond and border matching; E: concentric, or pie-shaped, matching.

side of the center line and parallel thereto. The plywood top, illustrated in the lower photo of Fig. 1 would be suitable for a piano bench top, or for a small table top.

The matching technique shown in Fig. 1 is only one of many ways to match veneer faces. A variety of other methods of matching relatively straight grained veneers, such as stripe, mottled and blister figure, are suggested in the several sketches of Fig. 2, and fully described in the captions. It is to be noted that slip matching, A, permits random widths, and eliminates some of the angling effects of the grain figure. It is preferable to random matching where adjacent pieces may be unlike in color or figure. It is the most economical type of matching when balanced effects are not required.

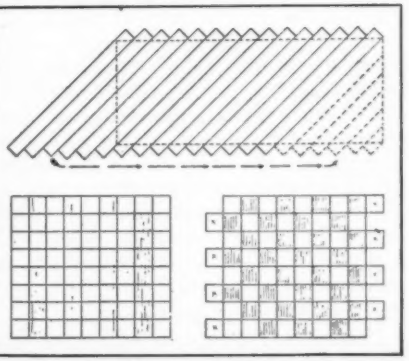


Fig. 3. Matching veneers for checker board, and 45° angle effects.

Fig. 4. Book matched veneer in modern design.

Book matching, B, indicates a sharper angle of the grain figure, which may not always be the case. It requires that all pieces of veneer be of equal width to carry out the idea of balanced grain figure. This edge trimming will be the cause of more or less waste. The alternate sheets are then turned sideways, and should be used in pairs of two, four, six, etc. Sometimes an odd sheet of veneer does not detract from the appearance. This book matching provides a desirable balance in any veneer face, top, side panel, front panel, end panel, door or drawer front.

Four-piece matching, C, in relatively unfigured veneer, can be made in many

Fig. 5. Book matching with raised panels and railed edges.

arrangements, only a few of which are suggested in the sketch. The design in C-3 shows a mitered border, which may be of a contrasting color, with grain in either direction. Many combinations are possible with or without color contrasts, bordered or unbordered, and with various types of strip inlays, which are not illustrated.

Diamond matching, D, is another geometrical type with many variants. The center section of D-1 is the true diamond design, while D-2 is called a reverse diamond.

Several arrangements of concentric, or "pie" matching are indicated in E, which may be with or without borders or centers. The trick in making snug joints in these multiple assemblies is to cut one segment a trifle oversize. Thus the final joint overlaps, and is cut through the double layer with a sharp knife. The veneers in most of these designs, A, B, C and D, can be edged spliced on tapeless splicers. The use of gummed tape is required on the "pie" shaped designs, E, and some operators prefer gummed tapes on other types where the designs are somewhat intricate, and tight matching is essential.

Fig. 6. Tops book matched and center matched fronts of swirl veneer.

Fig. 7. Highboy with swirl veneer front and book matched ends.

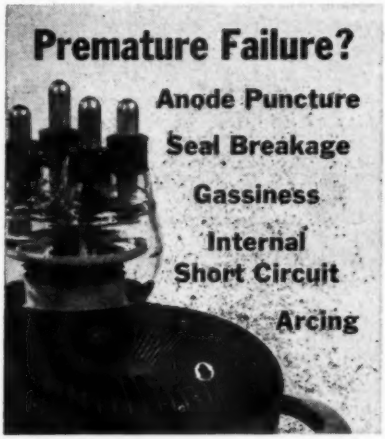
Still other types of matching are suggested in Fig. 3, such as the alternate squares of contrasting colors in checker board designs, or 45° angle arrangements. In the later case some economies can be realized by trimming off one end and splicing it at the opposite end, as shown by the arrows.

Plywood Matching in Furniture

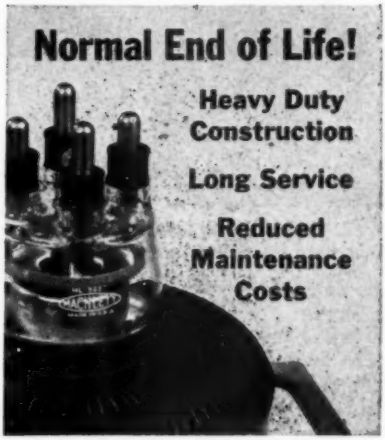
Examples of the use of veneer matching in plywood for furniture are illustrated in Figs. 4 to 10. These photos have

ELECTRICAL MAINTENANCE SUPERVISOR:

Why Do You Replace Your Dielectric Heating Electron Tubes?



LIGHT WEIGHT 889RA



HEAVY DUTY ML-5667

Cut Maintenance Expense!

Learn how heavy duty industrial electron tubes can reduce your maintenance costs.

RETURN THIS COUPON TODAY!

Distributed by Graybar Electric Company

MACHLETT — 55 YEARS OF ELECTRON TUBE EXPERIENCE

MACHLETT LABORATORIES, INC., Springdale, Conn.

Without obligation, please send maintenance and design literature on heavy duty industrial electron tubes.

Name_____

Company_____

Address_____

Fig. 8. Buffet with swirl drawers and doors, book matched ends and tops.

been supplied through the courtesy of the Drexel Furniture Company, one of the leading producers of plywood furniture, with several factories in the Piedmont area of the South.

An interesting modern design is shown in Fig. 4, in which all veneers are book matched. The buffet doors have vertical grain direction, while the grain of the drawer fronts is horizontal, making an attractive contrast.

Quite a different example of book matching is illustrated in Fig. 5, where the door panels are raised and the table top railed with a solid wood edge of contrasting color. This is sturdier for hard service that some of the table tops with veneer edges shown in the succeeding photographs.

In the dining room suite of Fig. 6 the tops have book matched veneer faces, having the edges of the tops veneered in a two tone effect with vertical grain. The drawer and door fronts are of swirl veneer, center matched in each item and matched in sets for the doors and drawers. A swirl is a more modest figure than a stump or crotch, and is cut from the wood grown in the area between the plain stripe wood and highly figured wood, as it blends into the more elaborate figure of the crotch or stump.

The highboy illustrated in Fig. 7 shows end panels and top of book matched veneers, while the serpentine drawer fronts are cut from a single large curved plywood panel, and kept in sequence in the parts of the finished highboy. Hence, the swirl effect is matched in all drawer fronts, from the bottom to the top of the cabinet. The overall result is most attractive.

The buffet in Fig. 8 again has book matched ends and tops of relatively plain figured veneer, contrasting pleas-

Fig. 9. Dining room suite with fronts of swirl veneer.

Wabash HARDWOOD SLIDES

smooth, quiet operation

BUILDS MORE SALES FOR YOUR TABLES

HOUSEWIVES judge your tables by the ease with which they operate. Make sure of smooth action by equipping them with Wabash Slides and equipment. Write today for more information.

it's the WABASH DESIGN THAT COUNTS

B. WALTER & CO., Inc. WABASH, INDIANA

Walter of Wabash

AMERICAN STREAMLINED COMB GRAINED

Veneer

Mfd. under Process Patent No. 2,261,497, and Lathe Apparatus Patent No. 2,397,110.

The most modern methods, equipment, and techniques are used in our new plant for manufacturing door stock in all thicknesses. Investigate our service and complete facilities now!

HIGHEST QUALITY . . .
OAK, — MAPLE — POPLAR,
SILVER ELM & WALNUT
SLICED AND ROTARY CUT
VENEER (In Single Ply Only)

HILL BROTHERS
VENEER COMPANY, INC.
EDINBURG, INDIANA

Fig. 10. Semi-circular wall table of swirl veneer.

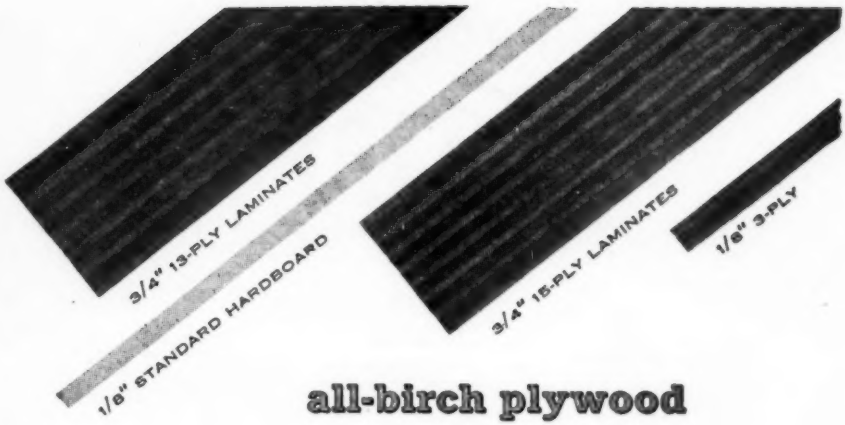
ingly with the swirl veneers on the curved doors and drawer fronts. The top has two toned veneer edges as in Fig. 6. It is to be noted that the doors are from flitch, while the drawer fronts are from a different but similarly figured swirl.

The dining room suite in Fig. 9 also has book matched veneer tops and cabinet ends, but with molded, rather than veneered edges. The door and drawer fronts are of swirl veneer, from a similar but different character of figure.

The semi-circular wall table, illustrated in Fig. 10, has swirl veneers on the curved fronts and ends, with plain figured top. The latter has veneered edges as was noted in Figs. 6 and 8.

Conclusions

There probably never will be agreement as to whether plywood or solid furniture is preferable, and all are entitled to choose what they like. However, after a lifetime, almost, of experience in the plywood industry, the writer leans strongly toward the intelligent use of plywood wherever it is practical. The evidence shows not only



all-birch plywood

From the world-famous forest resources of Finland, imported all-birch plywood—sizes up to 4′ x 6′, all thicknesses . . . cut to size to buyer's specifications. • All-birch ¾″ 13-ply or 15-ply laminates for cabinet doors, table tops, etc.; lumber core for table tops; door panels of birch plywood (⅛″ 3-ply). • Also standard hardboard, ⅛″ thickness, with an exceptionally hard surface. • *Dependable deliveries from Finland's oldest plywood source. Quotations submitted—your inquiries invited.*

FINWOOD INDUSTRIES INC. Station Plaza, Ramsey, N. J.

that more beautiful effects can be obtained in veneers than with solid wood, but that the ownership of attractive plywood products can be widely spread by slicing the wood that would make a 4/4 board into more than two dozen slices of thin veneer. The veneer and plywood products will be more durable and serviceable, and even more pleasing to look at than those of solid wood.

The word "solid" to some appears to connote genuineness, but the world would be a queer place to live in if the trim on our auto was of solid chromium, or the case of our watch were of solid gold or silver. Some metals, and some woods express beauty, others have sturdy strength. Is it not reasonable to combine then in layers so that every owner can enjoy products that have both beauty and strength? In that way many more owners will be supplied than would be the case if the fetish of the term "solid" is carried to unreasonable extremes.

Plywood furniture now profits from the use of improved adhesives and better manufacturing techniques. It has stood the test of time for more than 100 years, even before these better methods were available. Fortunately we still live in a free country and every one is privileged to equip his home with the furniture of his own choice.

PROJECT COE INTO THIS SCENE

and turn logs into ever versatile veneer

It's "what you do with what you have that counts." This is especially true today when not all logs are ideal "peeler grade." You must take what comes and handle it *fast* on a sturdy easily operated lathe.

In clipping, too, speed and versatility are what counts. Your men will produce more veneer per shift with properly designed equipment.

Efficiency in drying is another essential factor in a modern mill today. Coe has specialized in building the best possible veneer dryers. Have you seen one of their latest machines in action?

The **COE MFG. Co.**
Bank St. • Painesville, Ohio

LATHES • CLIPPERS • DRYERS • KNIFE GRINDERS

No one RASH enough

By ROBERT E. MAHAFFAY

Advertising and Promotion Manager, West Coast Lumbermen's Association

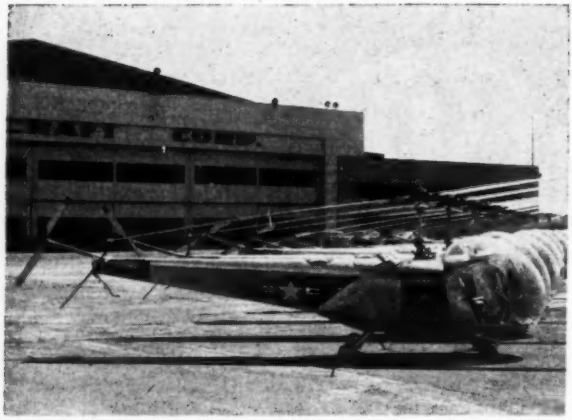
NOT so long ago a Bevatron, for use in atomic research, was built in California. One of the most modern of instruments, the steel supporting beams of its magnet sectors rest on 288 blocks of hard maple. Without them, undue stress concentrations would occur and operation of the instrument would be unsatisfactory.

Thus the story of maple extends from the finest Colonial floors of more than two centuries ago to the scientific marvels of a then undreamed of age. And so it is with the story of all wood.

No one today is rash enough to say that the possibilities of wood have been exhausted. Indeed, no other material has shown itself so adaptable to changing requirements.

Consider so simple a thing as the Teco split-ring connector—commercially unknown only a few decades ago. Teco connectors overcame the "Achilles' heel"

Glued laminated members have contributed a new beauty to architecture as well as providing structural strength.



These helicopter propeller blades are fabricated of laminated Sitka spruce and birch.

of timber construction—the joints—by spreading the load more evenly throughout all members of the joint, and producing stronger, more efficient joints with smaller members.

In addition to providing more economical construction in conventional buildings, Teco connectors have made possible the use of lumber in such spectacular structures as the 28-acre warehouse at Franconia, Virginia; two 357-foot towers at the Naval Ordnance Test Station, Inyokern, California—the tallest timber towers ever built in America; and the 250-foot span, glued laminated, bowstring trusses covering three new hangars at the Westchester County, N.Y., airport—the world's longest timber trusses.

From early history man has used wood in waging war. Ulysses devised a wooden horse to conceal Greek troops. In the great but dangerous days of the Renaissance, Leonardo da Vinci designed ingenious wooden instruments of war—wooden guns and troop bridges, portable assault drawbridges to lower over the enemy walls.

Today our modern armies use wood more than ever before. Lumber builds barracks, bridges and machine gun barricades. Portable sawmills follow the troops closely to the front lines. Almost everything a modern army carries—food, clothing and munitions—is packed in wood. In World War II, our armed forces used a greater tonnage of wood than steel!

FOR ALL YOUR PLYWOOD NEEDS

HARDWOOD • FIR • PINE • REDWOOD • DECORATIVE
HARDBOARD • FLUSH DOORS • PANELYTE
PEG BOARD • PLY-VENEER • PLYTEX
CALL! • WIRE! • WRITE!

THE DAVIS PLYWOOD CORPORATION
12555 BEREA ROAD CLEVELAND 11, OHIO
Western Union—ZD Phone ACademy 1-8800 Teletype—CV 564

COLUMBUS, OHIO 391 W. Spring St. (15) CApital 8-2681
TOLEDO, OHIO 303 Division St. (1) GArfield 3071
CANTON, OHIO 1413 Tuscarawas Ave., W. (2) Phone: 5-0181
ROCHESTER, N. Y. 532 So. Clinton St. (7) BAker 6750
SYRACUSE, N. Y. 157 Richmond Avenue (1) Phone: 2-8242

New techniques bring new demands. A 60" pipe was needed to convey highly corrosive waste liquor from a pipe mill to a disposal area. The pipe had to be strong, waterproof, acid-resistant and flexible enough to conform to uneven terrain. The answer lay in treated wood with laminated hoops held together with waterproof resorcinol resin glue.

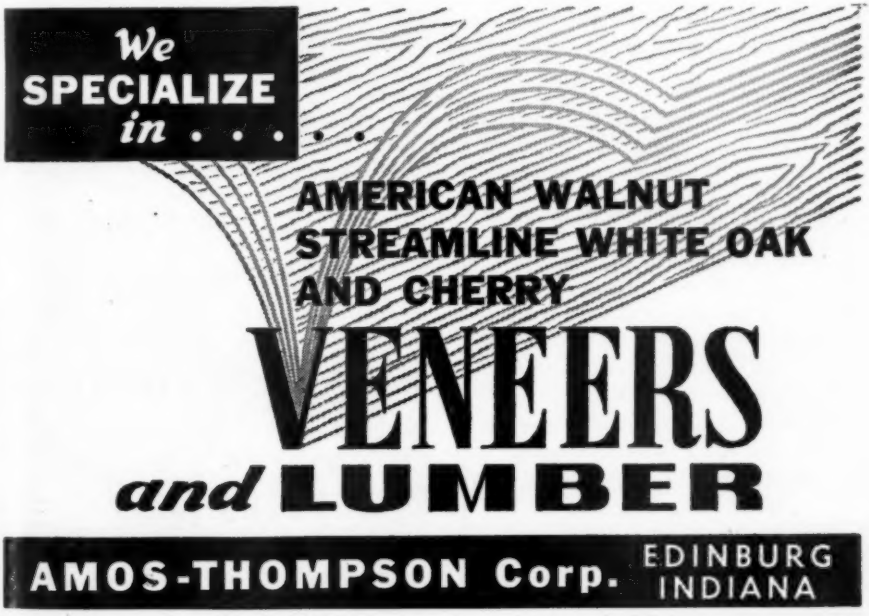
Scores of glue manufacturers, chemical companies and research laboratories have contributed to the developement of improved adhesives, and as a result new industries have been created. Products now range from laminated baseball bats to gigantic, soaring arches which grace many of our most modern buildings.

It was only some 20 years ago that the first glued laminated arch building in the United States was built as a research project at the U. S. Forest Products Laboratory. Today hundreds upon hundreds of them dot the land.

When the "ironclads" of the Civil War steamed from their berths, the doom of wooden ships was apparent. And yet, just recently, almost three million board feet of lumber were used in the construction of the all-metal superliner, the "S. S. United States." Seeking a defense against magnetic mines, the Navy turned to wood for its fleet of minesweepers.

Perhaps there is nothing more encouraging than the work that is going on across the country today in laboratories and manufacturing establishments, in big shops and little shops. Wood seems to inspire creative efforts. It lends itself to experimentation. It is amenable to alteration and change.

Among the things which have just been devised, or are now being devised, are laminated wood ladders, burnproof tables, desk legs hardened to resist splitting, stabilized color in light finished woods, impregnants that curb



Teco split-ring connectors have greatly expanded the use of lumber.

shrinking and swelling of wood. Tests are under way on paper overlays as a surfacing for low-grade lumber for use as house siding, cabinet and furniture stock, and even plank stadium seating. Being investigated are the advantages of cementing fiber glass to highway guard rails of wood, as it is believed that strength and stiffness will be increased and splintering will be decreased.

These are only a few of the scores of things that are happening to wood. The carpenters and builders and architects have been busy as well. In their search for new textures and interesting contrasts, for example, they applied Western red cedar bevel siding unconventionally with the rough side out. And they laminated different thickness of 4" Douglas fir and West Coast hemlock to form, at one and the same time, exposed ceiling, structural member and shingle base. Architects have found that about the only limit on lumber use is ingenuity.

Where the end will be, no one can say. One certainty exists—more things have happened to wood in the past fifty years than in all the thousands of years of its use. And the end is nowhere in sight!

CLICK'S VENEER TABLES

For Manufacturers, Dealers Anyone Who Works With VENEER, PLYWOOD, CUT LUMBER, BOXES, Etc.

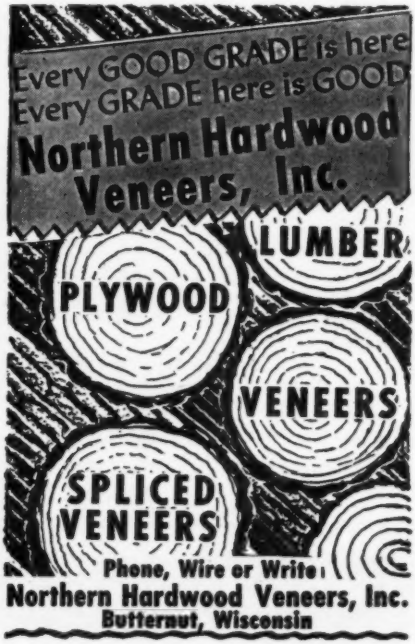
A handy book of accurate tables for quickly determining square feet contents of veneer and the cubic contents of logs, complete to fractional units.

Users tell us it pays for itself in a month in time saved and errors eliminated.

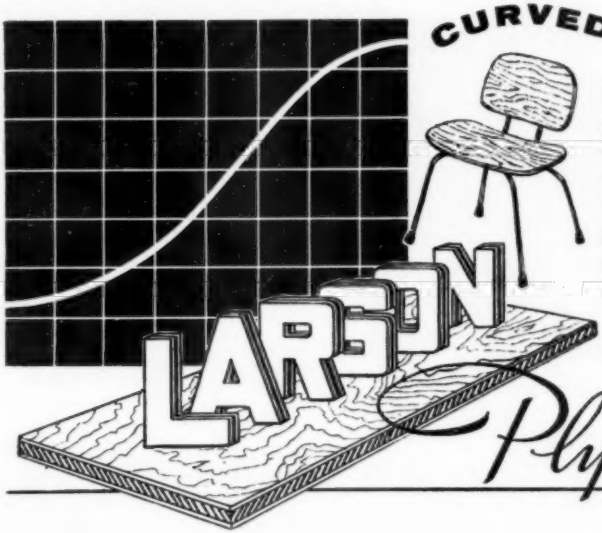
SEND FOR YOUR COPY TODAY

ONLY $10.00 POSTPAID

MRS. A. GRAHAM CLICK
Click's Veneer Tables
P. O. Box W-147 Elkin, North Carolina



Up your sales curve with CURVED PLYWOOD!



NEW modern eye-appeal

STRONGER—by weight—than steel

UNIFORMITY for manufacturing

EASY to finish

READILY AVAILABLE in many sizes

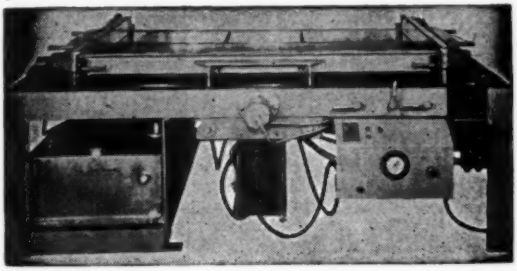
•

FREE CONSULTATION SERVICE WITH ENGINEERING STAFF

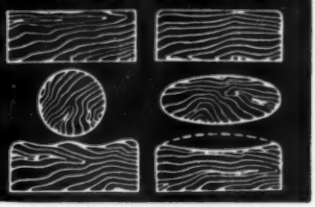
Plywood Co.

SHEBOYGAN
WISCONSIN

WELDON VENEER BANDING PRESS...



for such typical shapes as these



Here's a press that will take any shape panel . . . a few are pictured above. There are also other advantages, a few of which are listed. You can do your veneer banding job faster and better with a WELDON. Write today for complete data and list of users.

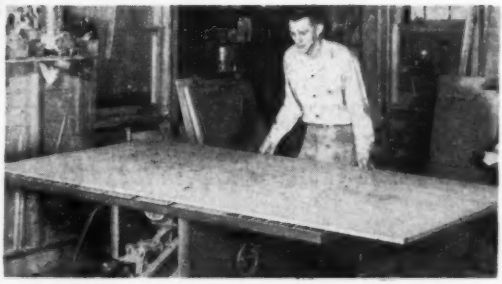
PLUS VALUES:

1. Bands applied in 20 to 30 seconds curing time for resistance heatings.
2. Self contained hydraulic power unit.
3. Completely automatic controls, including interval timer and thermostat.
4. Just 10 seconds to change panel size!

WELDON FLINCHBAUGH & COMPANY
777 GREENWOOD ROAD • YORK, PENNSYLVANIA

NEW! Atlas 10" Floor Saw

BIG 74" Table for BIG Panels!



Here for the first time a 10" floor saw with the capacity to make quick, easy, accurate work of sawing big panels and long boards. Equipped with a grill extension on each side, the table of the ATLAS 3170 measures a full 74½" x 27½", with 37¾" right of blade to fence! And this husky saw cuts 3¼" deep.

Big capacity isn't the only time and work saving feature of this ATLAS Tilt/Arbor Saw . . . exclusive double-locking quick-positioning fence saves hours every week, locks instantly in place, *lifts off* from any position . . . smooth, accurate controls eliminate errors, make settings easier, faster . . . large sealed ball bearings, extra heavy construction and precision machining assure smooth cutting, long life and unusual speed of operation. See your franchised ATLAS dealer, or use coupon for illustrated literature!

WRITE TODAY FOR FREE LITERATURE

Atlas Press Company
Quality Machine Tools Since 1911
ATLAS WOODWORKING POWER TOOLS
ATLAS METALWORKING MACHINE TOOLS
CLAUSING HEAVY DUTY MACHINE TOOLS

ATLAS PRESS COMPANY
227 N. Pitcher St., Kalamazoo, Mich.

ATLAS PRESS COMPANY
227 N. Pitcher St., Kalamazoo, Mich.

Please send me complete illustrated literature on ATLAS Woodworking Power Tools, including 10" Floor Saws, and the name of my nearest franchised ATLAS dealer.

NAME_____

STREET_____

CITY_____ STATE_____

Extra-Light Laminates

By **Thomas A. Dickinson**

Here is a new material which should be especially interesting to the plywood industry. Boeing is using these laminates in their manufacturing operations.

LAMINATES which are strong but unprecedentedly light in weight are now being made at Boeing Airplane Company, Seattle, Wash., by using hollow glass balls to increase the "air space" in foamed phenolic resin cores.

The balls are fundamentally the same as the glass ornaments that are used on Christmas trees. In fact, structural engineer Oree Weller says it was a decorated Christmas tree that gave him the basic idea that led to the development of Boeing's extra-light laminates.

Although their individual impact resistance is low, the glass balls are said to be non-susceptible to breakage once they are imbedded in a foamed resin core because the latter tends to cushion destructive impacts and vibrations. The core, in turn, tends to gain strength from the balls — due not only to the excellent mechanical properties of glass, but to the structural qualities of spheres in general.

Hollow balls made from paper, aluminum and various materials other than glass have been experimentally used by Boeing in fabricating extra-light laminates; but, to date, glass appears to have the majority of advantages.

As indicated by an accompanying photograph, relatively simple metal pouring forms are used to retain and align the glass spheres and facing materials prior to and during casting operations. Components of the forms are assembled with bolts and waxed, so that they can be readily separated from their laminates once the resinous constituents of the cores are polymerized.

The foamable plastic core material is readied for casting operations by mixing it with a catalyst or hardening agent. Then it is poured over the balls in each

Shown here are typical foamed-core laminates of the types now being made by Boeing Airplane Company. These particular laminates have been cross sectioned so that the structure of their cores could be observed.

A foamable phenolic resin is cast over hollow glass balls in a metal pouring form, which maintains the alignment of the balls and facing materials.

pouring form. Prior to foaming, it fills about 10% of the empty core space surrounding the balls.

A final facing component is placed over each pouring form after the phenolic resin is cast. Then the core is simultaneously foamed and solidified by heating the laminate assembly to temperatures of about 200°F. in a thermostatically-controlled oven.

Bonds thus produced between cores and facing materials are said to be much stronger than the bonds between laminae in many standard grades of plywood.

In general, the new laminates are useful where panels and other components of considerable thickness are desired or required—to isolate heat, deaden destructive sound vibrations, etc. If made from solid materials, such parts would be much too heavy to be handled readily or to be incorporated into a structure such as that of an airplane; and, due to a lack of "air space" in their cores, they would not be effi-

JUST PRESS TO APPLY.

WOODTAPE*

PLYWOOD EDGING

Goes on in Seconds

WOODTAPE furnishes a quick, simple, one-step method of edge-banding all types of plywood. It goes on in seconds, cuts production costs.

WOODTAPE is real wood veneer with a pressure-sensitive adhesive backing. Comes in 6 different woods to match any plywood. Can be sanded, stained, finished the same as plywood panel face. Eliminates gluing, clamping, sawing, nailing. Makes rough edges smooth.

AETNA PLYWOOD & VENEER CO.

HEADQUARTERS FOR A WORLD OF PLYWOOD

1737 N. Elston Avenue, Chicago 22, Illinois

BRANCH WAREHOUSES:

Detroit, Grand Rapids, Indianapolis, Peoria, Rockford

MILWAUKEE PLYWOOD COMPANY, Milwaukee and Wausau, Wisconsin

*Trade Mark of Puget Modern, Inc.

cient insulators. Conventional foamed-core materials are approximately as good as the new laminates from the insulation standpoint, but they may also have over 50% more weight.

Because they can be quickly and simply fabricated with numerous contours or configurations, extra-light laminates should be especially valuable as substitutes for relatively complex assemblies. For example, they should greatly reduce the cost of airfoils such as ailerons—whose internal truss structures alone may now require more than a thousand fabricating and assembling operations per unit.

HARDWARE CATALOG

The introduction of a new and entirely different hardware catalog has met enthusiastic reception from salesmen, distributors and dealers, according to Atkins Saw Division of Borg-Warner Corporation, Indianapolis.

This new Atkins catalog eliminates useless wordage and in a neat, easy-to-read manner presents all the necessary information hardware sales persons and customers need to know. Designed as a working catalog, it goes so far as to tell where each saw is used, who uses it and to what advantage.

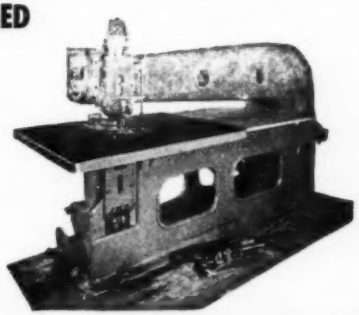
Calvin Coolidge had his moments. Once, at a banquet, he was given a handsome cane after a rhapsodic presentation speech that went: "The mahogany from which this cane is fashioned is as solid as the rock-bound coast of Maine, as beautiful as the sun-kissed shores of California."

Coolidge got up and stared at the cane for a few minutes. The audience was hushed. The President raised his eyes. "Birch," he said loudly and sat down.

B. RAIMANN EQUIPMENT *PAYS FOR ITSELF . . . QUICKLY . . . EASILY*

VENEER PATCHED AND UP-GRADED IN 2 SECONDS

B. RAIMANN AUTOMATIC VENEER PATCHING MACHINE is simple in adjustment, maintenance, operation. It upgrades as it saves. . . . interchangeable dies cut repair costs two-thirds!



WRITE for colorful folders and data on these machines.

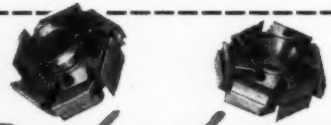
With only 4 seconds required to bore and plug a board knot

B. RAIMANN
Knot Boring and Plugging Machine

Contact E. V. Prentice for your nearest B. Raimann dealer.

PRENTICE
2203 N. RANDOLPH ST. • PORTLAND 12, OREGON

Special Cutter Problems— CALL DIEHL!



Standard Cutter Designs— ORDER FROM DIEHL!

For quick, low-cost *engineered* service on cutterheads and knives, call for a Diehl expert. With unmatched designing and machining facilities—backed by more than 40 years of practical experience—Diehl has a reputation for solving those cutter problems considered next to impossible.

Diehl also makes and stocks the finest, most complete line of standard heads and knives—"dynetrically" balanced for peak production at extreme spindle speeds.

No matter how complex your cutter problems appear, phone, write or wire your nearest Diehl representative or the G. M. Diehl Machine Works, Inc., Wabash, Indiana. And be sure to ask for the new Diehl Condensed Catalog on Cutterheads—Bulletin No. 452.

CUTTER DIVISION

On the Banks of the Wabash

THE G. M. **Diehl** MACHINE WORKS, INC.

WABASH, INDIANA • U.S.A.

Wood Working Panel

Russell C. DECKERT

WOOD WORKING Panel, a service for readers of WOOD WORKING DIGEST, is conducted by Russell C. Deckert, industry service representative, at the State University of New York College of Forestry at Syracuse.

The purpose of this feature is to answer readers' questions regarding the use of wood in wood industry. It is hoped that other industries with similar problems will benefit by reading the questions and answers.

Questions should be sent directly to WOOD WORKING DIGEST, 22 East Willow Ave., Wheaton, Illinois.

How can we eliminate chip marks which occur during molder operations? We have considerable trouble with the chips striking the finished surface while they are going through the machine, making severe indentations in the wood surface. This requires additional sanding and careful inspection to eliminate the chip marks before finishing. Tulip poplar causes the most trouble. (M.R., Pa.)

In order to make definite recommendations for your particular operations, we should have the following additional information: diameter of cutterhead; number of knives; angle of knife slot in head; operating rpm; and approximate moisture content of the wood. However, I have given your problem to our research staff and Mr. Robert Hoyle has the following general recommendations to make:

"The chip mark, or chip bruising defect is a continual source of trouble to the industry. This defect arises from two different sources:

"1. If the exhaust suction is inadequate, or the exhaust hood is poorly designed, all chips will not be drawn into the exhaust piping. Some may fall, or be deflected back into the path of the cutters, where they may foul the knives and become impressed into the newly cut surface. If this condition, which is due to poor hood design or inadequate suction, exists, some chips may come to rest on the lumber and be pressed into the wood by outfeed rolls, as on a planer. However, this is a less serious problem on a molder fed from the infeed end only. Cleanly severed chips are thrown from the knives by centrifugal force, into the hood. The hood should be designed to guide these chips toward the hood throat. The air velocity in the hood throat and the piping should be about 3000 ft. per minute or more, to entrain dry wood chips from a planer or molder. Regardless of suction pipe diameter, this velocity should be maintained.

"2. The second source of this defect is not associated with any lack of exhaust suction. In this case small chips cling to the cutting edges and are carried through 360° of rotation, where they are pressed between the back surface of the knife and the wood.

Only WARDWELL Y18
sharpens crosscut and rip saws
in one operation!

Fast . . .
Accurate

The WARDWELL Y18 **automatically** swivels the saw . . . sharpens and bevels each tooth as it comes along. Insures sharp edges, true bevels, balanced points . . . keeps saw in perfect cutting circle.

Speed **your** production with a WARDWELL Y18.

Write for free bulletin No. Y18 **today.**

AC38 CIRCULAR SAW SETTER

Sets teeth at a speed of 150 to 200 per minute on saws with diameters from 5" to 38".

WARDWELL
Manufacturing Co.
3804 Ridge Road
Cleveland 9, Ohio

This is most likely to be the defect in question, since most operators experiencing chip mark trouble immediately check their exhaust suction and take corrective measures. When this fails to eliminate the trouble, you can be reasonably certain that chips are clinging to the knife edge rather than falling back from the hood. This clinging action is likely to occur on any species of wood. Its elimination requires some adjustment of knife angles or grinding technique, and possibly a change in cutterhead speed. If the wood fails in shear on tension just below the cutter path and near the point where the knife leaves the wood, the chip may become wedged over the cutting edge. Other explanations suggest that curls of wood fibers, and electrostatic forces may be responsible. All of these explanations express possibilities, but the important question is—how do you prevent the defect? I do not believe that any systematic study of the problem has been made. If such work has been done, it is unpublished. Mr. P. Harris (in "Timber News & Sawmill Chronicle," Aug. 1938) explains that nicks in the cutting edge present an area where fibers will not be cut. Mashed and torn fibers may cling to the knives at such points. Therefore, nicked knives should be resharpened. Since chips are pressed into the wood both by the cutting edge and the back face of the knife, the clearance angle can often be increased to minimize, if not entirely eliminate, the defect. Increasing the clearance angle is analogous to reducing the included angle or sharpness angle of the knife. Another method which has proven successful is to reduce the cutting angle by back beveling the face of the knife.

"Specifically, for machining kiln dried yellow poplar (or tulip poplar) we would recommend a knife edge with the following shape: cutting angle = 20°; included angle = 40°; clearance

angle = 30°. Cutting angle may be reduced by beveling back the front face of the knife.

"In the event that this is not entirely satisfactory, some further increase in clearance angle or decrease in cutting angle in the order of five degrees each, should be tried.

"Other causes of the chip mark defect may be low cutterhead speed or high moisture content in the lumber. Cutterhead speed should be great enough to provide a peripheral tip speed of 5000 f.p.m. or more. R.P.M. = (5000 x 12) / π x dia. measured in inches. One woodworking plant, which increased planer speeds for the express purpose of reducing chip marks reports very good results."

Please advise if there is a practical method of coloring the white sap of walnut lumber, making it usable with the dark heartwood for furniture. (O.K., Ohio)

To darken the sapwood, black walnut lumber is usually steamed before it is seasoned. However, the sapwood of steamed lumber seldom becomes as dark as the heartwood, and additional staining is often required in finished products.

The lumber is piled in a specially constructed pit or vat and covered with sawdust. Low pressure or exhaust steam is then admitted into the bottom area. Spaces between layers of the pile are desirable in order to obtain a good circulation of steam, thereby producing more uniform darkening of the sapwood.

The usual practice is to steam the lumber for two to four days. There appears to be no particular advantage gained by steaming for longer periods. In fact, longer steaming periods and average temperatures in the steaming pit exceeding 180° F. may cause a seasoning degrade and loss of strength during the kiln drying operation.

70 YEARS OF KNIFE MAKING EXCLUSIVELY INSURES YOU QUALITY and HIGH PRODUCTION

DETROIT KNIVES

PLANER—MOULDER
VENEER—CLIPPER
SHAPER STEEL

Constant research and study over the years have resulted in the top quality that has kept so many leading manufacturers and mills using DETROIT knives.

Specify DETROIT for your next order—you will be pleased with the results.

Better Knives Since 1885

DETROIT EDGE TOOL CO.
6370 E. NEVADA
DETROIT 34, MICHIGAN

At the end of the steaming period, the lumber is allowed to cool in the vat naturally or by the use of a water spray. To reduce surface checking and end splitting, the hot wet lumber should not be exposed to the cold atmosphere.

Steaming in vats or pits is considered to be more effective than steaming in a dry kiln. In the majority of kilns it is difficult to maintain a high relative humidity at temperatures of 160° to 180° for a period necessary to darken the sapwood to the desired degree without excessive loss of steam.

The pit or vat should be built tight and of durable materials with an open or perforated steam supply pipe leading into the bottom. The pipe should be extended and framed or boxed in, to obtain good distribution of steam through the pile.

NEWMAN
HEAD GRINDER
Pedestal Type
G-16
FOR ALL CUTTERHEADS
Grinds all heads up to 11" in diameter and thick or thin knives up to 16" long
Double Spindle Grinding Head Two Grinding Wheels— One flat & one saucer wheel
$495.00
F. O. B. GREENSBORO, NORTH CAROLINA
DETAILS ON REQUEST
WRITE TO-DAY
Table glides smoothly on roller bearings and moves vertically on worm gear rack & pinion drive.
FAST DELIVERY FROM STOCK
NEWMAN MACHINE CO., Inc.
GREENSBORO, NORTH CAROLINA, U. S. A.

Will you please send information on the problem of cutting timber when the sap is in the tree. We also would like to know just when the sap is out of the tree. (J.M., N.Y.)

Living trees always contain sap or moisture in the trunk and crown. In some species there appears to be a variation in the over-all moisture content of the tree with respect to the season of the year. However, in general this variation is not considered significant.

The problems associated with cutting timber in the spring and summer are those of greater insect and fungi activity and more rapid drying condition. Therefore, timber cut during the warm months is more susceptible to stain, decay, insects and excessive end checking than the timber cut during the winter when conditions are less favorable for these wood destroying agencies.

To minimize this damage to spring and summer cut timber, the material should be utilized in the shortest possible time. If this is not possible the logs should be piled off the ground in a dry shaded area. As an added precaution, it may be necessary to spray the logs with a wood preservative and coat the ends of the logs with an anti-checking compound.

Heredity is what a man believes in until his son begins to act like a fool.

COMING EVENTS

Several dates for spring meetings have been set by the National Plywood Distributors' Association. West Coast meeting will be held February 8, 9, at the Ambassador Hotel, Los Angeles, Calif. February 15, is set for the Northeast meeting, Commodore Hotel, New York City. The Midwest meeting will take place March 4, Edgewater Beach Hotel, Chicago. A special southern meeting will be held March 8, at Roosevelt Hotel, New Orleans, La.

Southern Pine Association will hold its 40th Annual Meeting at New Orleans, April 4-6. A big machinery and equipment exhibit will be a feature of the meeting at the New Orleans Municipal Auditorium. Details of this meeting will be given in a later issue of WOOD WORKING DIGEST.

FIR PLYWOOD JUBILEE

Western fir plywood manufacturers are celebrating their 50th anniversary this year with a Golden Jubilee promotion aimed at increasing sales by 10 million feet a week throughout the year.

That's the word from Douglas Fir Plywood Association of Tacoma, Wash., the industry trade association which represents Washington, Oregon and California's 97 fir plywood mills which produce ¾ of the nation's panels.

According to W. E. Difford, association managing director, "We will celebrate the occasion with the biggest sales promotion effort ever undertaken for this all-purpose building product."

The heart of the promotion will be 50 Golden Ideas for building or remodeling with fir plywood designed by five of the nation's topflight architects. The industry will preview them with all the drama of a new "opening" in mid-June. The presentation will take place in Portland, Ore., where the first fir plywood was produced for exhibit at that city's world fair in 1905. It will be the biggest meeting of plywood business people ever assembled at one time.

PORTER-CABLE ESTABLISHES CANADIAN CORPORATION

De Alton J. Ridings, president of Porter-Cable Machine Company of Syracuse, N.Y., announces the formation of a subsidiary Canadian company under the name of Porter-Cable Power Tools Limited. This organization will take over distribution of the company's already well-established line of portable electric tools in Canada. Franchised sales and service stations will be located in all principal cities. Porter-Cable's purpose in establishing the subsidiary corporation is to increase its distribution throughout the Dominion.

Eugene V. Allen, formerly of Syracuse, has been transferred from his post as sales manager of Porter-Cable's West Central U. S. region to become vice-president and general manager of the new Canadian corporation.

PLYWOOD PRODUCTS

A four page folder titled, "8 Plywood Products for Architects and Builders" has just been released by Associated Plywood Mills, Inc., Eugene, Oregon.

Illustrated and described are standard fir plywood, construction plywood (interior and exterior) and six decorative plywoods including Sea Swirl, and veneer faced plywood in birch, Philippine mahogany and knotty pine.

REINSTATES JOINTERS

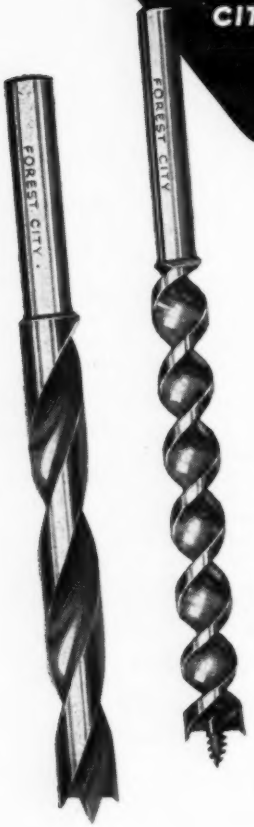
The Enterprise Company of Columbiana, Ohio announce the reinstatement of their "Crescent" Model 12" and 16" heavy duty jointers. The famous Crescent four knife round safety head, which increases quality and production, is featured on the machines.

Sturdy construction throughout, long adjustable ground tables and quick acting fence are other dominant features. Head drives are available with either motor built directly on cutterhead, or V-belt drive.

Cutterhead speeds up to 5000 r.p.m. can be had. The 12" jointer is furnished with 3 or 5 h.p. motor; 16" jointer with 5 or 7½ h.p. motor. Optional equipment includes motor driven knife grinding and jointing attachment, shaving hood for blowpipe connection, foot brake and rear knife guard.

FOREST CITY

MACHINE BITS and DRILLS



INCREASE OUTPUT AND REDUCE COSTS

ALL Forest City Tools have:

- SHARP CLEAN CUTTING EDGES
- WIDE DEEP FLUTES FOR BETTER CHIP CLEARANCE
- SPECIAL HEAT TREATMENT FOR LONGER LIFE
- PLENTY OF CLEARANCE FOR COOL FAST CUTTING

Forest City Wood Boring Tools are *Production Tools*, specially designed for maximum performance under all conditions. For over 60 years their top quality has been accepted as a standard by the woodworking industry.

You, too, can buy them with full confidence in their ability to do the job *well*.

CALL YOUR LOCAL DISTRIBUTOR

For your convenience, wherever possible Forest City Tools are sold through Industrial Supply Distributors. Check your Distributor first . . . then write!

SEND FOR LATEST CATALOG

HOLLOW CHISELS AND BITS • MACHINE BITS • PLUG CUTTERS
MACHINE DRILLS • COUNTERSINKS • AUGER BITS • ROUTING TOOLS

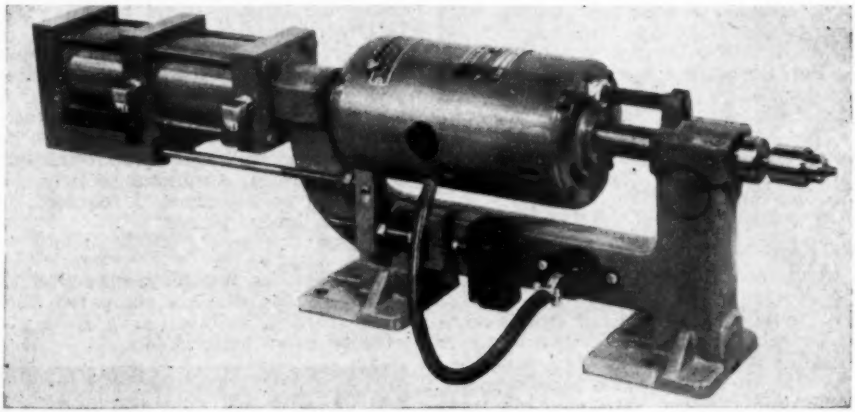
FOREST CITY

FOREST CITY BIT & TOOL COMPANY

1206 KISHWAUKEE STREET • ROCKFORD, ILLINOIS

EQUIPMENT and Supplies for the WOODWORKING INDUSTRY

AIR FEED DRILLING UNIT

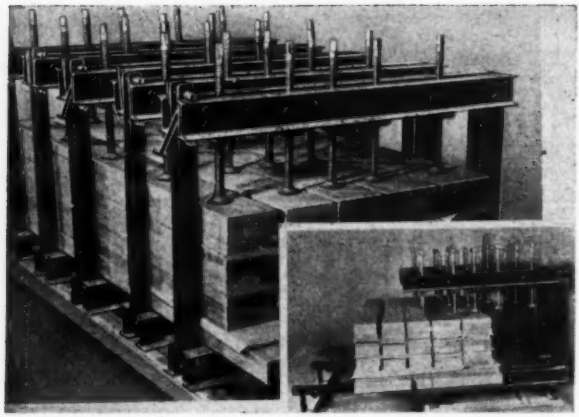


This unit offered by the Electro-Mechano Co., 261 E. Erie St., Milwaukee, Wis., is suitable for high speed drilling of pilot and shank holes for screws, small dowel holes, wire holes, etc. It has a ⅛ h.p. motor, spindle speeds from 2500 to 15,000 r.p.m. with a stroke of 1½". The unit is fed with air and the rate of feed is controlled hydraulically.

The right drill speed is instantly set on the Electro-Mechano drilling unit by positioning the speed control lever at the desired r.p.m. The air feed unit provides easily adjusted rapid approach to the work and the proper rate of feed is achieved by use of a hydraulic resistance unit.

SECTIONAL VENEER PRESS

Sectional veneer presses, with side opening feature, are offered by the Wetzler Clamp Co., 43-15 11th Street, Long Island City 1, N. Y. These sectional presses are furnished in various standard sizes, from 36" wide x 20" high, to 50" wide x 36" high. For the length, sections should be spaced about 18" to 20" apart, center to center, any number can be used for any length of work desired. 36" and 42" width presses



are made from 4" I beams, 50" presses from 5" I beams. 3 spindles are furnished on 36" presses, 4 spindles on 42" presses, and 5 spindles on 50" presses.

For lamination operations of heavy materials, 50" width presses, 30" and 36" high, can be furnished with conveyor bar on rollers so that the load may be laid outside the press and then rolled into same. This permits easy loading and unloading.

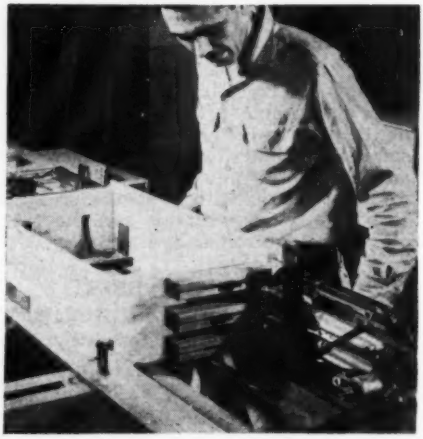
For the bonding of the various plastic finishes, such as Formica, Micarta, Textolite, etc., the sectional veneer press is a good machine, and it also is in use in many plants for the lamination of wood beams, flush doors, etc. Further advantages of sectional presses are that same do not have to be permanently fastened to the floor, and can be set up against dead wall space, due to the side loading feature. Additional sections can be added at any time, if required, to laminate longer panels.

AUTOMATIC DRAWER STAPLER

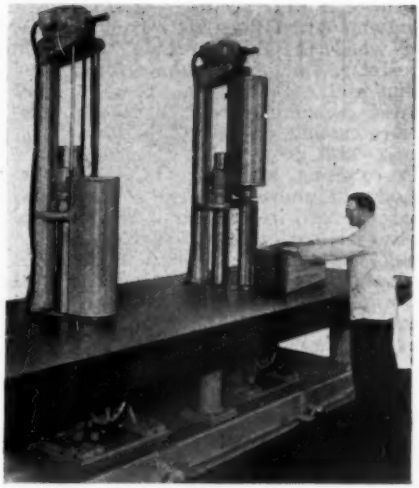
A new multiple-head drawer assembler which automatically drives six staples at one time has been developed by the Powers Wire Products Company, 540 S. Monterey Pass Rd., Monterey Park, California, manufacturers of air staplers and wire staples.

The machine employs six new lightweight staplers (Model NC-1) set in tandem, three on a side. The drawer sides are placed in the frame and an electric foot valve fires all six heads simultaneously. The machine can be adjusted to drive the staple to the desired depth from flush to 3/32" countersunk.

The unit shown is in operation at the plant of the Justin A. Davis Company in Los Angeles, manufacturers of unfinished furniture which is shipped to dealers all over the United States. According to this user, the new machine completes the fastening operation in one-third the time as compared with hand nailing, as well as providing a cleaner, more uniform job.



Similar jig setups are available for manufacturers of cabinets, dressers, desks, movable shutters, picture frames and wood case luggage. The NC-1 air staplers used in this machine are also ideal for prefab work on roof sections, wall sections, indoor cabinet work and acoustical tile installation. They use a narrow staple, available from ½" to 1⅛" leg length.



SUPER-SHAPER

Greenlee Bros. & Co., Rockford, Illinois, has developed a special-built, direct electric drive, double spindle shaper for use in turning out mock-up model parts in experimental body design shops. A number of these super-shapers are now being used for this purpose by the automotive industry. The table size of this shaper, 180"x60", makes it ideal for handling the large pieces of work used in making wood mock-ups for future automobile body designs. Many additional applications, for a large-table shaper of this type, can be found in pattern and woodworking shops handling large and irregularly shaped pieces of work.

DISSTON
HAS THE EDGE.

in cutter heads and planer knives

For higher operating speeds, smoother production, use Disston cutter heads and planer knives. The built-in advantages of Disston design and craftsmanship produce high-quality finished wood surfaces at minimum operating cost.

Disston Philbrick® Cutter Heads have accurately ground center holes . . . are dynamically balanced and precision lapped to run without vibration and chatter. That means smoother operation, more accurately planed and shaped wood. Knife changes are quick and simple—no gibs, clamps or holders. Each pair of heads can work a variety of patterns.

Disston Thin Planer Knives for round head machines are made to your exact specifications, balanced in pairs or sets, uniform in size and temper. Whether you are planing hard or soft abrasive wood, the superior Disston steel will stay sharper longer between grinding and jointing.

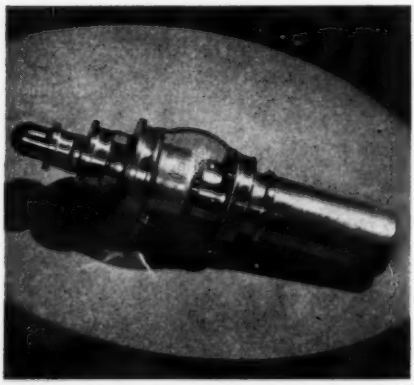
Henry Disston & Sons, Inc., 295 Tacony, Philadelphia 35, Pa.
Other factories and branches: Toronto, Seattle, Chicago

To give the accuracy necessary in shaping automobile body contours out of wood, the outsize table has to be perfectly flat and of non-warping design and material. In order to meet these demands, Greenlee uses a one-piece casting, of dense fine grained cast iron, with deep waffle ribbing, poured to exacting standards in their own modern foundry. Extreme accuracy and care is used in machining the table, to assure a perfectly flat surface, free of pits, valley, and ridges. For better adaptability to odd-shaped pieces of work, T-slots, are machined into the edge of the work table to accommodate extensions.

Easy, convenient control over the entire operation of this shaper is at the operator's instant command from the front of the machine. Vertical adjustment is provided through a screw and spiral gear arrangement, with the entire spindle carriage traveling in accurately ground ways.

COAXIAL TRIODES

Machlett Laboratories, Springdale, Conn., announces the ML-6420 and ML-6421 coaxial-terminal triodes, employing thoriated-tungsten filaments, for industrial and broad-cast equipment of 5-10KW power output. As replacements for type 5666 and 5667, respectively, the new triodes provide improved performance ratings, safety margins and strength. New thoriated-tungsten filaments greatly reduce power requirements while offering life increases to 100%. Plate and grid current ratings are increased by better than 10%; terminal inductances are very low; high transconductance characteristics assure stable operation, low grid drive and high plate efficiency.



ML-6420 uses standard Machlett water jacket and is rated for 20 kW input, 12.5kW anode dissipation. ML-6421 employs unique aluminum radiator to reduce weight to 13 pounds, as against 40 pounds for conventional type; ML-6421 is rated for 20kW input, 10kW anode dissipation. Full ratings on both tubes to 30mc; reduced ratings to 90mc.

Incorporating a rugged, coaxial terminal structure, heavy-wall anode, self-supporting thoriated-tungsten filament and large, ring-seal connections, each of these heavy duty triodes will give excellent performance and low-cost service.

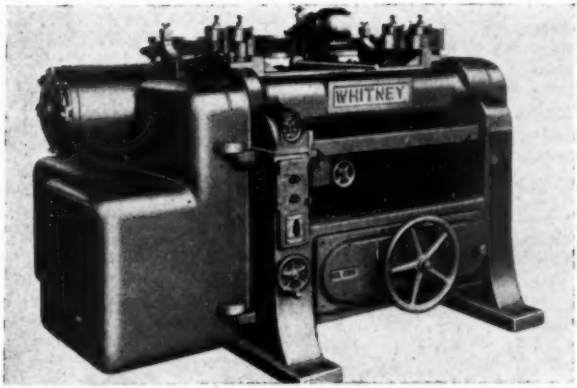
CARBIDE STEP CUTTERS

Onsrud Cutter Manufacturing Co., Libertyville, Illinois, has announced a new carbide tipped step cutter, recommended for the machining of any type of wood, plastics and non-ferrous metals.

"Step-cutters" are as the name implies, cutters staggered on the spindle forming steps, which give intermittent cuts, allowing for faster feeds, smooth finish and reduced machine spindle strain. The cutters may be stacked to any desired height. If so desired, cutters could be ground with side clearance so that they may be used for slotting, grooving, or other operations.

SIX-ROLL SINGLE SURFACER

Baxter D. Whitney & Son, Inc., Winchendon, Mass., recently introduced a new heavy duty six-roll single surfacer. This planer is designed for rough or finish planing at faster feeds giving an accurate, high quality finish to all lumber passed through it. Completely new in design, it has many outstanding features which stress easier operation, simplified adjustments, accuracy and low maintenance.



Its rugged construction throughout, long tapered wedges, oversize cutterhead and direct-connected cutterhead motor insure a powerful and highly efficient performance. Standard equipment includes friction brake on cutterhead with interlock, 7" dia. sectional infeed rolls, back pressure bar with central adjustment, motor raising and lowering of bed, center table adjust-

Specifications: width, 36"; planes stock up to 8" in thickness: infinitely variable feed, 30 to 90 feet per min.; automatic knife grinder; sectional infeed rolls; sectional chipbreaker; weight, 9600 lbs.

THE FINEST DOWEL ROD MACHINE MEANS

THE FAMOUS Jenkins **NATURALLY!!**

NOW AVAILABLE ON LEASE PLAN or DEFERRED PAYMENT

EXCLUSIVE PATENTED FEATURES!!

- SELF CENTERING STOCK GUIDES
- SYNCHRONIZED KNIFE ADJUSTMENT
- ADJUSTABLE HEAD • NEEDLE BEARINGS
- PATENTED VENTILATING
- MULTIPLE MOTOR DRIVE

AND

82 YEARS OF LEADERSHIP MEANS

JENKINS TYPE "R" for ¼" to 2" FIN. DIA.
JENKINS MODEL 3500 for 2" to 4" FIN. DIA.

JENKINS is a division of

CURT G. JOA, INC. **SHEBOYGAN FALLS, WIS.**

NEW TYPE NOZZLE

A new type nozzle for spray painting, known as the 66SF, is announced by the Binks Manufacturing Company, 3122 Carroll Ave., Chicago, Ill. It is heralded as a major improvement in spray nozzle design.

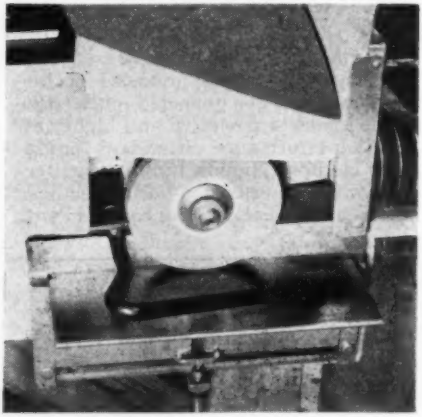
This nozzle is designed for a siphon setup on a Binks No. 18 spray gun. This precision gun has long occupied top position in the Binks line, but this new nozzle makes the "18" more efficient and versatile than ever.

According to the manufacturer the 66SF nozzle offers several advantages for such industrial applications as painting machinery, individual products and small areas, or wherever a siphon cup setup is called for. Among the major claims are: 1) "double" atomization, 2) a wider spray pattern, 3) less air consumption, 4) 15% faster flow of fluid, 5) smoother finishes with synthetics and lacquers and 6) less time out for gun cleaning.

DIAMOND POINT DRESSER

Users of abrasive belting can now make up their own belts with a diamond point wheel dresser and the Econaway splicer, according to Aget-Detroit Company, 605a Main St., Ann Arbor, Mich. The new diamond point dresser which can be applied to older Econaway splicers now in service, or ordered with new splicers, permits the skiving wheel to be dressed without stopping the wheel or changing the elevation of the table. Moreover, the dresser helps maintain the face of the wheel true so that a more uniform gluing surface as well as a sharp shoulder at the edge of the abrasive results.

Dresser consists of diamond point holder, rod and receiver tube guide. The latter mounts by means of the holddown cap screws on the skiving wheel arbor and thus accurately aligns the traverse of the point. Dressing of the wheel consists simply of inserting



the holder rod into the receiver and turning the point adjustment up till contact is made; then sliding the rod in and out until the desired surface is achieved.

If it bends, we'll bend it!

STANDARD & CUSTOM BENDS

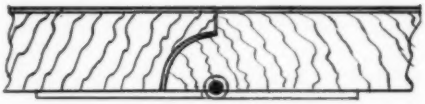
SORENSEN BENT WOOD CORPORATION

ESTABLISHED IN 1880 AS H. G. SHEPARD & SONS

MARSHALL, NORTH CAROLINA

MARCOLOY KNIVES

One of the production problems that has caused considerable difficulty to woodworkers has been the drop leaf joint. The Marcoloy Co., Viaduct Rd., Springdale, Conn., points out that there are several reasons for this. The cut is generally across the grain and dulls the knives more rapidly. The glue line and the veneer dulls the knives and thirdly, the contour of the knives for the male



and female cut must be very accurate so that the drop leaf and the table top will fit well and still have clearance for easy operation.

Marcoloy is offering carbide knives for this operation and has two different knife designs to produce drop leaf joints. For one spindle shapers, a single cutterhead assembly produces both male and female cuts with the same knives. Each knife has two forms, one at each side. The top section of the table can be shaped first and drop leaf section is shaped with the same cutterhead, by lowering the spindle. For two spindle shapers, two cutterheads are supplied, one to cut the table top and the other to shape the drop leaf.

These newly designed knives, it is said, are particularly efficient when cutting veneered stock or plastic laminates. Adjustable auxiliary spur knives are used in this cutterhead to provide double cutting on the veneer, plastic and glue lines, the parts where these materials score or groove the cutting edge more quickly.

SEA SWIRL PLYWOOD

To meet the growing demand for Sea Swirl decorative fir plywood in parquet squares, Associated Plywood Mills, Eugene, Oregon has announced the availability of its popular brushed plywood in three new sizes—12" x 12", 16" x 16" and 24" x 24".

Sea Swirl squares are packaged in labeled cartons especially designed for the product. They contain 96 pieces of 12" squares (96 sq. ft. of coverage); 40 pieces of 16" squares (71 sq. ft. of coverage); 24 pieces of 24" squares (96 sq. ft. of coverage).

COST SAVING IDEA

Use of elevated platform trucks as "work benches" saves time, labor and employee fatigue. Parts and fabricated structures requiring drilling, punching and similar operations are kept mobile and at comfortable, "work height" level. Circular SA13-54 from Nutting Truck and Caster Company, Faribault, Minn., illustrates and describes the use of these truck-work benches.

Elevated platform trucks can be furnished in any required height and size for mounting bench size machine tools. Running gears consist of four ball bearing swivel casters for easy mobility in any direction or of two casters on one end with axle mounted main wheels opposite; choice of wheels include roller bearing, demountable rubber tired or semi-steel in wide range of sizes.

To make dreams come true, don't oversleep.

SANDPAPER MAKER

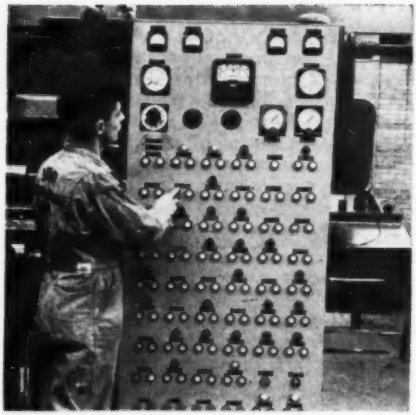
The world's largest sandpaper maker —a machine as long as three city blocks —was put into operation recently by Minnesota Mining and Manufacturing Co., St. Paul, Minn., makers of coated abrasives for industrial and home uses.

The huge 976-foot-long plant was built to apply advanced technology to the manufacture of coated abrasives, and represents the combined technical skills of 3M's engineering, research and production staffs.

The huge 976-foot-long plant was single manufacturing unit with a shell built around it. Specifications were precise, and exceeded those set down for processing today's coated abrasives. Research personnel and management determined that the plant have built into it the flexibility and controls necessary to make what the company calls "coated abrasives of tomorrow."

The new maker will enable the 3M Company to take advanced pilot plant research and development and apply it to the actual manufacture of coated abrasives, according to the firm's management.

Electronic, neucleonic, mechanical and air equipment in the maker control machine speeds, curing temperatures, bond viscosities and other variable factors; and penetrating radiation in the form of beta rays measures the uniformity of coating thickness and coating weights as the continuous web of coated abrasives passes through the maker to the drying tunnels.



This master control panel is the heart of the complex electrical system which operates the world's largest sandpaper maker. From this panel an operator controls the many devices employed to assure consistency in product quality.

These devices—many of them designed by 3M technicians—were develcped to insure continued improvements in constructions and consistency in quality, which are major factors in forwarding the use of coated abrasives for grinding and finishing in industry, the company said.

This is the world's largest sandpaper maker, built by Minnesota Mining and Manufacturing Co., to apply advanced technology to the manufacture of coated abrasives. The plant—which is actually a machine with a shell built around it—is 976 feet long.

to up-to-date information

about equipment and supplies as featured by our advertisers in this particular issue. All of our advertsers will be glad to send information about their products, but we have listed the following firms because they have mentioned booklets in their advertising copy.

ABRASIVES
Minnesota Mining & Mfg. Co., page 117, Booklet

ABRASIVE BELT SPLICER
Aget-Detroit Co., page 124, Bulletin.

ADHESIVES
Koppers Company, page 29, Booklet.

BITS &DRILLS
Greenlee Tool Co., page 12, Catalog 34-M.
Forest City Bit & Tool Co., page 170, Catalog.

CARBIDES
General Electric Co., page 61, Bulletin WW-20.

CLAMPS
Adjustable Clamp Co., page 97, Catalog.
James L. Taylor, page 140, Catalog.

CONVEYORS
C. O. Porter Machinery Co., pages 22-23, Bulletin

CUTTERS & KNIVES
Virginia Machine Tool Co., page 20, Catalog.
Jones & Orth Cutter Head Co., page 35, Catalog
G. M. Diehl Mach. Works, page 164, Bulletin 452

DOWEL MACHINES
Hawker Manufacturing Co., page 3 Manual.

DUST CONTROL SYSTEMS
Aget Manufacturing Co., page 137, Literature.

ELECTRON TUBES
Machlett Laboratories, page 149, Literature.

FINISHING MATERIALS & SUPPLIES
Maas & Waldstein Co., page 119, Sample.

GLUING EQUIPMENT
Union Tool Corp., page 102, Booklet.

HARDBOARD
U. S. Plywood Corp., page 79, Booklet.
Upson Co., page 85, Samples.

HIGH FREQUENCY BONDING EQUIPMENT
Columbia Division, page 142, Bulletin HP-3.

HOGS
Wm. Patent Crusher & Pulverizer Co., page 67, Brochure.
American Pulverizer Co., page 134, Bulletin.
Jacksonville Blow Pipe Co., page 141, Bulletin.

HUMIDIFYING EQUIPMENT
Bahnson Company, page 98, Booklet W-3.

JOINTERS
Oliver Machinery Co., page 1 Bulletin 166.

NAILING MACHINES
Food and Machinery Corp., page 30, Bulletin.

PLANERS & SURFACERS
Buss Machine Works, inside back cover, Bulletins

PLYWOOD PRESSES
Black Brothers Co., page 7, Bulletin 11-G.
Columbia Division, page 142, Bulletin HP-3.

PORTABLE ELECTRIC TOOLS
Black & Decker Mfg. Co., page 21, Catalog.
Porter-Cable Machine Co. page 43, Manual.

ROUTERS
Porter-Cable Machine Co., page 43, Manual.

SANDING MACHINES & EQUIPMENT
H. B. Smith Machine Co., page 2, Literature.
Beach Mfg. Co., page 4, Bulletin.
National Air Sander, Inc., page 121, Catalog.
Timesavers, Inc., page 127, Folder.
Sand-Rite Mfg. Co., page 129, Circular.

SAW BLADES, SAWING MACHINES & EQUIP.
Victory Carbide Saw & Tool Co., page 50, Literature.
North American Products Corp., page 63, Catalog
A. W. Forrest Mfg. Co., page 71, Brochure.
Mereen-Johnson Machine Co., pages 80-81, Bulletins.
Atlas Press Company, page 163, Literature.
L. S. Starrett Co., page 185, Bulletin WW.
Moak Machine & Tool Co., page 189, Booklet.
Tannewitz Works page 70, Circular.
Mattison Machine Works, back cover, Literature.

SAW SHARPENERS
Wardwell Mfg. Co., page 166, Bulletin Y18.
Foley Mfg. Co., page 139, Booklet.

SPRAY PAINTING
Binks Manufacturing Co. page 110, Catalog.

TABLE EQUIPMENT
B. Walter & Co., page 186, Sample.

TACKERS & STAPLERS
Fastener Corp., page 33, Catalog.
Powers Wire Products, page 78, Catalog.
Saranac Machine Co. page 103, Bulletin 168.

TENONERS
Greenlee Bros. & Co., page 86, Bulletin 545.

VENEER PATCHERS
E. V. Prentice Co., page 163, Folders.

WOOD PRESERVATIVES
Protection Products Mfg. Co., page 6, Folder.

Starrett
BAND SAW BLADES

"SKIP-TOOTH"

Unsurpassed for fast clean cutting of hardwoods, softwoods, plastics, fibre, wood substitutes.

REGULAR

For all types of band saw machines. Furnished cut to length and welded or in coils in handy reel dispenser.

Order Through Your Distributor Or Write for Bulletin "WW" Which Gives Complete Information.

Starrett
SINCE 1880
WORLD'S GREATEST TOOLMAKERS

THE L.S. STARRETT COMPANY · ATHOL, MASS., U.S.A.

New Literature

CLIPPER LINE DESCRIBED

Merritt Solem, Division of Solem Machine Co., 118 S. Niagara St., Lockport, N. Y. offers a new brochure on their complete line of clippers.

Included in Brochure C-34 are specifications and dimensions, plus a general description of operating parts and construction features on heavy, medium and light duty clippers. Of special interest is a portion of this brochure devoted to a general outline of special safety control arrangements for both one and two man operation.

CARBIDE CATALOG

A new catalog covering latest prices and specifications on standard tools and blanks in its 300 series steel cutting carbides—grade 350 and 370 is announced by Carboloy Department of General Electric Company, Detroit, Mich.

The 16-page publication, GT-305, includes all blanks and shapes introduced since development of the series a year ago. It also lists several new tools and blanks added to the line recently, in various styles and shapes, such as throw-away inserts, right and left hand offset threading and mechanically held blanks.

KNIFE GRINDING MANUAL

The second edition of a book written by C. G. Monnett, Jr. has been released to the general public. The manual contains 167 pages and 187 pictures, charts and drawings, and is thought to be the most complete book of its kind ever published in the United States.

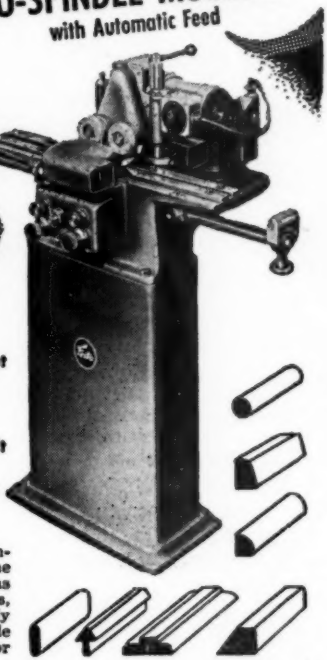
The following are some of the subjects covered by the Knife Grinding and Woodworking Manual: Grinding Knives; Setting Knives; Molder Operations; Wood Defects; Balancing Knives; Composition and Care of Grinding Wheels; Jointing Knives; Development,

SAVE UP TO 90% WORKING TIME

NEW Festo TWO-SPINDLE MOULDER

with Automatic Feed

Front spindle is removable and an extension table can be supplied to convert moulder into a Single Spindle SHAPER with power feed.



- Quick set-up
- Simple operation
- Clean work as tools work at 10,000 r.p.m.
- Safe operation by totally protected tools
- Stock can be moulded as it comes from Rip Saw
- Two speeds 25 and 50 feet per min.

Now . . . the small and medium-sized shop can produce all the numerous types of bars, such as louver boards, rungs, mouldings, etc. . . . speedily and economically with this new Festo Two-Spindle Moulder. Available as bench or floor model.

Write for Complete Information

Festo FESTO WOODWORKING MACHINES

745 51st Street Brooklyn, N. Y.

Selection and Care of Cutterheads and Knives; Cutting Angles and Bevels; Cutting Speed, Feed Speed, and Energy Consumption of Machining Wood; Molder and Planer Machine Stoppages and Their Remedy; Structure of Wood; Lumber Abbreviations; Common Woodworking Pattern Names; Safety, and many other worthwhile subjects.

Copies of the Knife Grinding and Woodworking Manual may be ordered from C. G. Monnett, Jr., vice-president, Dependable Machine Company, Greensboro, N. C.

ELECTRONIC GLUING BOOKLET

Electronic gluing is described in a 16-page technical bulletin offered by Monsanto Chemical Company, Springfield, Mass. Although emphasis is on edge gluing of lumber, the information applies in a general way to all gluing operations in which radio-frequency

heating is used for curing.

Included in the booklet are sections on electrode arrangement, mechanics of adhesion, preparation of stock and factors affecting selection of the proper adhesive.

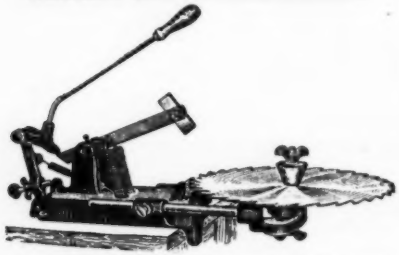
ABC'S OF SPRAY EQUIPMENT

An adequate working knowledge of spray painting is wrapped between the covers of "The ABC's of Spray Equipment." This booklet is offered by the DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio.

The 64-page booklet is written in non-technical language and is illustrated with drawings to give a clearer picture of the over-all spray painting subject.

Each basic item of equipment used in spray painting is given comprehensive editorial treatment covering every phase from operation to maintenance. The booklet also can be of considerable value to spray operators because it lists the remedies for any troubles which may affect a good finish.

SIMPLEX
CIRCULAR SAW SETTING MACHINE



An excellent tool for setting small circular saws. The successful operation of all circular saws depends largely upon the manner in which they are fitted.

To obtain the best results the teeth should be properly and evenly set.

This machine does the work perfectly, insuring easy and true running and smooth cutting.

The hammer strikes every blow with equal force and at the same angle hence the set of each tooth is absolutely uniform. Will give a light, medium or heavy set.

Adjustable for saws, either rip or cut-off, from 9" to 24" in diameter.

The machine will last for years if handled with ordinary care and intelligence.

Further details upon request

ZEILLER & NAGEL, INC.
232 JAVA BROOKLYN, N.Y.

HANDBOOK BY BEHR-MANNING

A 60-page "Production Digest" of authoritative papers cn coated abrasive grinding and polishing techniques, has been published by Behr-Manning Corporation, Troy, N. Y., to "help industry solve modern grinding and polishing problems and suggest new and practical methods". It constitutes the first known effort on the part of a coated abrasives manufacturer to compile a handbook of the art, and is assembled from 20 technical papers prepared by Behr-Manning methods engineers during the past two years for the leading periodicals of production engineering in both the woodworking and the metalworking fields.

Subjects covered include: coated abrasives theory and practice, contour polishing and grinding, abrasive belt lubrication, disc grinding problems, tolerance grinding of wide sheets, abrasive strapping techniques, special abrasive cloth shapes and their uses, the cutting of spiral-wound abrasive drum covers, the modern use of coated abrasives in wood finishing, and suggestions on cost cutting in production practice.

Clean cuts—longer life under continuous hard use is exactly what you can expect when you use Dodds Dovetail Bits.

Precision made of special carbon steel—each Dodds Bit individually hand finished by expert craftsmen—your guarantee of the finest in bits.

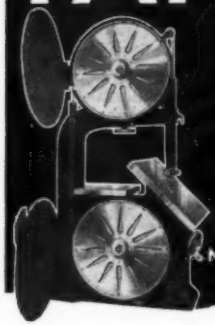
There is a Dodds Dovetail Bit for every size dovetail. Immediate delivery from stock. Special bits made to order. We have a complete Dovetail Bit service.

• *Send us your requirements*

ALEXANDER DODDS COMPANY
451-453 MONROE AVE., N. W. GRAND RAPIDS 2, MICH.

FOR HIGH-SPEED
SCROLLING and RESAWING

FAY & EGAN



FIRST CHOICE
OF MASTER
CRAFTSMEN
SINCE 1830

No. 940—24"
Band Saw

No. 950—36"
Band Saw

Typical of FAY & EGAN'S entire line of Woodworking equipment, No. 950 and No. 940 Band Saws cut production costs . . . time . . . troubles. Their rugged construction affords years of low-cost, trouble-free service. Carter de-mountable type wheels. Fully guarded for safety . . . finely balanced for top quality work. Metal cutting models also available.

Write for complete details

FAY & EGAN CO.
2023 EASTERN AVE. CINCINNATI 2, OHIO

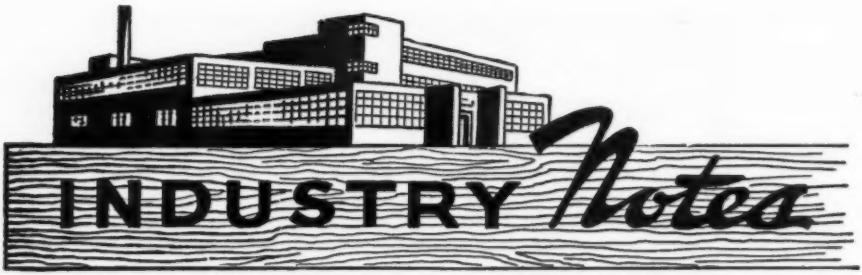
ACCORDION DOOR HARDWARE

An informative "how, why, and where" brochure describes hardware applicable to all types of accordion doors. The booklet is offered by Grant Pulley & Hardware Corp., 31-85 Whitestone Parkway, Flushing 54, N.Y.

Hardware for louvered, jalousie, solid, plywood, and hollow core door installations are fully described with clear cross-sectional and ordering data. The manufacturer states "the increasing use of accordion doors in home and commercial building dictates that clear, instructive literature be made available to builders and dealers alike."

Grant accordion door hardware will support loads up to 50 lbs. per door. Hardware features include free swivel action, nylon rollers and solid carrier housings.

Men tell you about the big fish that got away, and women about the one they caught.



EARLE HART

Earle L. Hart, 66, of 1211 Ashland Ave., Wilmette, Illinois, died in December.

Mr. Hart started in the woodworking machinery business as a demonstrator for Wysong & Miles back in 1909. After spending two years with this firm, he joined the Chicago Machinery Exchange, Chicago, Illinois, remaining with this firm as salesman for about three years. He then joined the Berlin Machine Company, headed by the late

Mr. P. B. Yates, which company name was changed to the P. B. Yates Machine Company in 1916. He remained with the Yates organization through their merger with American Machine Company, which formed the Yates-American Machine Company and he remained with them up to 1932.

In 1932, Mr. Hart opened his own offices at 565 W. Washington Blvd., Chicago, Illinois, and formed the Earle Hart Woodworking Machine Co., of which he was president until the day of his death.

He is survived by his widow Jane B. Hart.

WINTHER JOINS BERTHELSEN

Kaj I. Winther, formerly with the Fjellman & Winther Company, has become associated with the Berthelsen Engineering Works, Inc., Joliet, Ill. He will serve as president of the firm. Mr. Winther has had extensive experience in the hydraulic press field and will assist in the firm's new expansion program. Organizational structure of Berthelsen Engineering Works has been revised so that it is now wholly owned by American interests.

WISCONSIN BUYS SHIMER

The Wisconsin Knife Works, Beloit, Wis., recently purchased the cutter division from Samuel J. Shimer & Son Inc., Milton, Pa. One of the oldest names in the woodworking industry, Samuel J. Shimer & Sons was established in 1868.

While the circular bit type cutterhead has always been the particular specialty of the company, they have also manufactured a complete line of round heads, square heads, expansion matcher heads, shaper cutters, etc., for use on molders, matchers, shapers, box machinery, planers, surfacers and tenoners. Inquiries and orders for Shimer products should be sent direct to the Shimer Division of the Wisconsin Knife Works.

ASSOCIATION CHANGES NAME

At the annual meeting of the Association of Manufacturers of Woodworking Machinery, the organization voted to change the name to the Woodworking Machinery Manufacturers' Association. Plans for expanding the membership are now underway. The program for the two-day meeting included a number of worthwhile discussions on current business conditions within the woodworking machinery industry, the evaluation of the Woodworkers' Show in Grand Rapids, discussion of rental and leasing plans and the export relief program.

REDCO ANNOUNCEMENT

Officials of the Redco Tool Division of the Red Lion Cabinet Company have announced the withdrawal of the "Redco" carbide tipped tool line from the market.

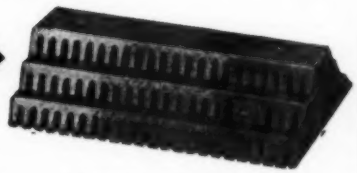
John C. Hampton, Jr., manager of tool sales, speaking on behalf of his company stated, "Our decision to discontinue the manufacture of our carbide tipped tool line came as the result of an over-all re-alignment of our production plans. We shall, however, continue to manufacture and sell the Redco precision and profile grinder for in-plant maintenance of cutters."

TRAINING OPPORTUNITIES

Several schools of special interest to woodworkers are being held this spring. The Timber Engineering Company will hold a short course on wood adhesives and gluing from March 14-18 at the laboratory. Write to the company, 1319 Eighteenth St., N.W., Washington 6, D.C., for complete information.

Binks spray painting schools are scheduled for the following dates: March 7-11 and April 4-8. The schools are open to anyone interested in, or connected with the industrial application of paint and coatings. The schools will be held at the firm's Chicago plant, 3114 W. Carroll Ave.

SCHMIDT LOCK-EDGE SAFETY SHAPER STEEL



New Safety Feature

Now, you can be sure! Schmidt Safety Shaper Steel . . . Either Lock-Edged or not, is now ground to within .001 (one thousandth) of an inch in width. Attach coupon to your letterhead and mail today for full details. No obligation.

THIS LABEL ON EACH BAR GUARANTEES CONTINUOUS UNIFORMITY

Shaper steel bars on this width, either plain or Lock-Edge, are ground to within .001" (one thousandth of an inch) in width; therefore a piece of any length left from this bar can be used with a piece from any other bar of this nominal width bearing this label.

CHARLES G. G. SCHMIDT & CO., INC.
403-405 BROOME ST. • NEW YORK 13, N. Y.

Charles G. G. Schmidt & Co. Inc.
403-405 Broome St.,
New York 13, N. Y.

Please send me further information on the Schmidt Lock-Edge Safety Steel.

NAME .....

FIRM NAME .....

ADDRESS .....

CITY ..... ZONE....

STATE .....

BURTON
STEEL HEAD
BAND
SAWS
Burton Saw Co.
WORCESTER 8, MASS.
BAND RESAWS

"Filer Finished" — Ready to use!
Try 'em, you'll like 'em.
LOG BANDS NARROW BANDS

Appointments

Joseph Hyman has been selected as vice-president and technical director of the Catalin Corporation of America. He will have charge of research and development, quality control and technical service.

A. Schrader's Son announces two appointments. **Jesse A. Giles** is now manager of the Toronto plant and **Donald H. Storey** has been appointed assistant manager.

Victory Carbide Saw & Tool Company of Chicago, has a new sales engineer in **R. D. "Bob" Brooks.** Mr. Brooks has had a great deal of experience with saw and cutter applications.

E. L. Barton, formerly supervisor of sales administration, has been named distribution manager for DeWalt Inc. In his new position, Mr. Barton will be responsible for the dissemination of all information to the field organization on availability of the various products of the company. **Conde Hamlin,** vice-president in charge of sales and director of DeWalt Inc., has been elected executive vice-president of this Lancaster, Pa. company.

William L. Abramowitz has been named a vice-president of the Borden Company's Chemical Division.

National sales manager of the Industrial Division of Binks Manufacturing Co., Chicago, is **B. J. "Jim" Hedger.** He was formerly Chicago district sales manager.

Walter F. Hinkle has been named as vice-president of engineering for the Acme Steel Company. He will direct all engineering activities for the company and is also in charge of the firm's mechanical and electrical divisions.

Promotion of **G. Mack Wynn** from vice-president in charge of production to the newly created position of executive vice-president of the Auto-Nailer Co., Atlanta, Ga., has been announced.

Max D. Pretorious is now sales manager for the G. M. Diehl Machine Works, Wabash, Ind. **Clem D. Coady,** who previously was sales manager, has left the organization to enter a business of his own.

Behr-Manning has appointed a new vice-president and a new assistant to the president. **Edwin C. Evans** has been made vice-president and **William I. Clark, Jr.,** has become assistant to the president in addition to his present responsibilities as secretary of the company.

John "Jack" Cox is general sales manager for the Enterprise Co., of Columbiana, Ohio. His appointment was announced earlier this fall. Enterprise recently acquired two woodworking lines—"Crescent" and "Hoosier"—and will expand its sales program accordingly.

Clay Brown, prominent Portland lumber and plywood executive has become fourth president of the M & M Wood Working Company, West Coast plywood door and lumber concern. He was one-time sales manager for the firm.

Stockholders of the Masonite Corporation, Chicago, have elected **Paul B. Shoemaker,** vice-president in charge

CLAMP NAILS **Wood Joint Fastener**

Customarily, any features added increase the price of a product, but not so with CLAMP NAILS Wood Joint Fasteners! You actually reduce your joining costs 50%, and at the same time you have a product that is immune to atmospheric conditions.

In using CLAMP NAILS, you use NO GLUE or intermediate joining agents that can dry out—you eliminate drying time, tools and space—you have a better, yet lower priced product. Consult us for recommendations on your production. Save—Sell for less—Produce a better product.

CLAMP NAIL COMPANY

4542 West Palmer St. Chicago 39, Illinois

of sales, as a director of the company. The general managers of the corporation's two domestic hardboard plants were named vice-president by the board of directors. They are **Donald J. Gray** at Laurel, Miss., and **William A. Cotton** at Ukiah, Calif.

H. H. Humphreys, formerly assistant finance manager, has been promoted to the position of manager, Control Section, Wood Preserving Division of Koppers Co., Inc.

Merit Products, Inc., Culver City, Calif., announces the appointment of **William G. Gillett** as works manager.

Reisen Hardwood Lumber Co., Union, N.J., has recently added **Roswell Carpenter** to its staff as dry kiln superintendent and special products engineer.

REPRESENTATIVE NAMED

Nutting Truck and Caster Company, Fairbault, Minnesota, announces the appointment of the Pope Equipment Company, 3719 Petoskey Avenue, Cincinnati 27, Ohio, as its sales representative for the Cincinnati territory, which includes the Cincinnati area as well as certain counties in the states of Indiana and Kentucky.

SOUTHERN SCREW EXPANDS

Production will begin early in 1955 in the new building of Southern Screw Company, Statesville, North Carolina. This new plant, first unit in a $2,000,000 expansion program, will almost double the company's present space and will provide for 600 to 800 employees.

WHITNEY REPRESENTATIVES

Baxter D. Whitney & Son, Inc., Winchendon, Mass., woodworking machinery builders, announces the appointment of two representatives as follows:

Claude S. Sutton, Sutton Woodworking Machinery Co., Greensboro, N.C., covering Virginia and North and South Carolina.

C. H. "Happy" Cowan, Memphis Machinery & Supply Co., Memphis, Tenn., covering Tennessee and upper Kentucky.

NEW FIRM

The founding of American Wood Products & Tool Supply, Edwardsville, Ill., is announced by Mr. Earl Picklesimer whose resignation from North American Products Corporation, where he served as sales manager, has become effective.

American Wood Products & Tool Supply will serve the woodwork, metalwork, plastic, and graphic arts industries. Carbide tipped saw blades, carbide tipped and solid carbide knives, high speed steel cutter heads, hardwood plywood of all kinds, rotary cut single ply veneers, appalachian lumber, and dimensioned parts will be supplied by shipments directly from the producing mills.

Many successful men were cranks before they succeeded—now they are geniuses.

Mechanics Through the Ages

When he needed a metal tool
THE INDIAN MOUND BUILDER OF EARLY AMERICA SIMPLY SELECTED A PIECE OF COPPER ABOUT THE RIGHT SIZE, PLACED IT IN A MOLD... AND COLD-HAMMERED IT INTO SHAPE!

FIRST AMERICAN INDUSTRIALISTS TO USE PETROLEUM OIL FOR MACHINE LUBRICATING APPEAR TO HAVE BEEN COTTON MANUFACTURERS WHO, ABOUT 1845, STARTED MIXING THIS OIL WITH COSTLY SPERM OIL TO CUT EXPENSES—

Eli Whitney, COTTON GIN INVENTOR, SADLY MISCALCULATED WHEN HE AGREED TO PRODUCE 10,000 MUSKETS IN TWO YEARS BY HIS NEW-FANGLED INTERCHANGEABLE SYSTEM OF MANUFACTURE. IT ACTUALLY TOOK EIGHT YEARS SIMPLY TO "TOOL UP" FOR THE JOB!

Moak High Speed Band Saws

FOR EFFECTIVE CUTTING OF A WIDE RANGE OF MATERIALS

A standard tool of woodworking shops, Moak High Speed Band Saws are proving their versatility in cutting such materials as pressed and plied boards, plastic laminates, corrugated paper, ferrous and non-ferrous alloys, sheet metals and rolls of glass fibrous material. Functional design includes two-wheel equalized brakes for safety; "Lubricated for Life" bearings to cut maintenance costs. Made in 26" and 36" sizes, available in three drives; also made with a 4-speed transmission.

Get the facts **on Moak Band Saws right away. Write for our colorful booklet.**

The Market Place

Rates for Classified Advertisements

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of $7.50 for name and address and a five line advertisement. For additional lines, only 75c per line.

DISPLAY ADVERTISEMENTS: 1 inch (Minimum), $8.50; 2 inches, $17.00; 3 inches (Maximum), $25.00.

Write directly to those offering the machine for sale, for prices and full descriptions. If what you seek is not advertised, write Hitchcock Publishing Company, 222 E. Willow Ave., Wheaton, Ill., making known your wants on either new or used machinery and the publisher will gladly assist you.

FOR SALE
S. W. Harrington, Inc.

P.O. Box 230 **Asheville, N. C.**

Air Compressors, various sizes
Band Saw, New Delta 20" bb, dmd
Blowers, Garden City 55"
Borers, Greenlee 369-4 ft. M.D.
Borers, Greenlee No. 370 6 ft. horiz. dmd.
Borers, Moak SS 2 Spdle. horiz. dmd.
Boring & Sawing, McKnight 26F dmd
Clippers, Coe 88" bd. & motor
Dovetailers, Dodds, 10 & 20 spindle
Frequency changers, 30 KW dmd. and 15 KW.
Glue Jointer, Diehl No. 66 bb. dmd.
Glue Jointer, Jenkins No. 313A bb. dmd.
Jointers, Glue, Yates-American No. 213 bb. dmd.
Jointers, New Moak 12". bb. dmd.
Lathe, Yates No. 74 bb. dmd.
Lathes, Mattison 57D
Mortiser, Sidney, single spindle pb. bd.
Mortiser, Greenlee No. 228 Vert. bd. & motor
Mortiser, New Britain No. 7, bd. & motor
Mortiser, W&M No. 288—5 spdle. Horiz. dmd.
Moulders, Mattison No. 222. 6" bb. dmd.
Moulders, Yates-American C-89—6" bb. dmd.
Planer, Facing, Yates-American 36" with Jackson & Church feeder on base, bb. dmd.
Planer, Whitney 36" sgl. rd. hd. bb. dmd
Planers, F&E—30" dbl. pb. bd. & motors
Planers, Berlin 36". rd. hd. dmd.
Planers, New Crescent 24" bb. dmd.
Planer, F&E No. 156 36x7 dmd. rd. head
Planer-Matcher, Yates A1-15"x6" rd. hds. pb. bd.
Redrier, Merritt 12 plate 36x72
Routers, Yates American U9 bb dmd
Routers, Defiance sgl. spdle. high speed, dmd.
Sanders, Niagara brush, bb. dmd.
Sander, 48" double disc, dmd.
Sander, Smith 49" 3-drum endless bed, bd.
Sanders, F&E 60" 3 drum roll feed, dmd.
Sanders, McKnight sgl. drum 24"x16" dmd.
Sander, Oakley Model, G2 bb. dmd. bd. block
Sander, Porter Cable vert. osc. dmd. sgl. spdle.
Sander, W&M No. 171 belt. bb., md.
Saws, Hermance Gang Rip, pb. & motor
Saws, New Delta-Crescent 12" tilt. arbor, dmd.
Saws, New Multiplex 40A & 50A
Shaper, Defiance dbl. spdle., bb. dmd.
Shaper, Whitney No. 389, dbl. bb. dmd.
Shapers, New Moak single spindle. bb. dmd.
Shapers, Greenlee No. 180 dbl. bb. dmd.
Shaper, Whitney double spindle, bb., md.
Sticker, American No. 1, 1 side 4" pb. bd.
Taping machines, Dennis No. 2
Tenoners, Yates-Amer. No. 55 sgl. end, bb. dmd.
Tenon Heads, single & double end
Tenoner, Hayes 6 ft. dbl. with copes, pb. bd. & motor
Veneer Press, Francis 84x48
Many other items, send your inquiries

Surplus item. One Northfield Single Surfacer No. 5, 24"x6", three knives, round head, 5 H.P. and 1 H.P., 3 phase 60 cycle 220 V., Magnetic push buttons and two sets of knives. Can be seen in operation. $650.00.

CYLINDER MFG. CO.
Hawthorne, New Jersey
Phone Hawthorne 7-2370

L. R. Kenner

3325 Trinity Road **Louisville 6, Ky.**

Boring Machine, P & B six-spindle horizontal
Cutter Grinder, Mattison No. 231 motor drive
Dowel Cut-off and Pointer, Bell No. 3, 99% New
Dowel Driver, Bell No. 8, factory rebuilt
Moulder, 6" Hermance No. 60 ball bearing m.d.
Planer, 30" American No. 666 double. bb, motor drive
Router, Ekstrom-Carlson No. 232, 5 hp motor
Sander, 6' Wysong & Miles No. 291, hand stroke

Woodward Machinery Company
309 E. Second St. Cincinnati 2, Ohio

Band saw, G & K 36 in., MD., $175
Borer, F&E vertical gang, 12 spdle., MD., $450
Borer, Fischer, 6 spindle horiz., 28", $350
Borer, Superior 2 spindle horizontal MD, $185
Clamp, Handy No. 30 Drawer and Case, $125
End Matcher, Schindler, for small plant, $350
Lathe, Bignall Auto. Variety, MD, BB, $400
Lathe, Kline Automatic Variety No. 52, $250
Molder, Egan 8", 4 side, $350
Mortiser, New HC vertical, $100
Mortiser & Borer, American horiz. 5 hp, HC MD, $300
Planer, F&E 27x7 Sec. roll single MD, $500
Planer, Enterprise 24x7, sgl., $250
Radial saw, Comet 5 HP, single phase, $400
Ripsaw, Mattison 207, BB, MD, straight line, $600
Ripsaw, F&E No. 999, BB, DMD, st. line, $500
Belt sander, Curtis, auto. stroke, belt, $250
Belt sander, Mattison No. 131, hand block, $185
Shapers, BB, MD, Single small, $75 to $125
Sticker, Smith, light, 6 in., 4 side, $250
Swing Saw, Towsley DMD BB, $150
Tenoner, Smith, 2 copes and trim saw, $250
Tenoner, Houston single end, $100
Variety saw, heavy duty, with jointer, MD., $175

Clifton Machinery Co.
1023 W. 6th St. Cincinnati, Ohio

Saw Dust and Shavings Mill Exhausters and Blowers—Hundreds in stock, sizes to suit any need. Also Air Compressors, Fans, Rotary Blowers, Money Savers—Send specifications.

All machines rebuilt and fully guaranteed.

FOR SALE
KILN DRIED CABINET WOODS

Any quantity up to car-load lots. Immediate delivery or pick-up. Walnut, Cherry, Red and White Oak, Mahogany, Northern Birch, White Ash, Hard Maple, Poplar, Basswood, Prima Vera, Idaho White Pine, Red Gum, Cypress.

CHESTER B. STEM, INC.
439 Grant Line Road New Albany, Ind.

FOR SALE

One 4KW Girdler Thermex High Frequency unit. Good condition. $500.00.

PLY-CURVES, INCORPORATED
1615 MONROE AVENUE, N. W.
GRAND RAPIDS 5, MICHIGAN

CARVER, Curtis (2) 8-sp. BB., DMD., with freq.
DOVETAILER, Fay & Egan 15 sp. MD
DOVETAILER, Dodds 12 sp. MD
FREQUENCY CHANGER, Armor 5 KW 120 cycle & 35 KW 60/90 cycle
GLUE JOINTER, Diehl 660 BB, DMD., ('50)
JIG SAW, Oliver No. 173, thr. 37" BB, DMD.
JIG SAW, Jones No. 64 th. 34" BB, MD.
KNIFE GRINDER, Covel-Hanchett 36" BB, MD
KNIFE GRINDER, Seybold 72", BD
LATHE, Mattison 57B 42" cap. BD
MOULDER, Vonnegut 12", BB, DMD 3/60/220
ROUTER, Porter No. 610, BB, MD
SANDER, Yates 43" Endless bed, BB, DMD
SANDER, Smith 48" Endless bed, BB, DMD
SANDER, Nash 10-sp 25-72" BB, MD
SANDER, Curtis Edge & Vertical, BB, DMD
SAW Mattison 207 BB, DMD., 10 & 20 HP
SHAPER, Eaglesfield 2-sp BB, DMD. 7½ HP 3/120/440/7200

WEB MACHINERY CO.
JAMESTOWN, NEW YORK

QUITTING BUSINESS

We offer one Force Feed Rip Saw, Hermance No. 300-G, 20 H.P. Motor, $1,325.00. Blower System serving this Rip Saw, including Cyclone, $400.00. One Radial Arm Saw, 5 H.P., $250.00. One Sawdust Burner, complete with Cyclone, $1,950.00. All equipment now operating and in excellent condition, some almost new.

SOUTH-WEST LUMBER COMPANY
4500 Roe Blvd., Kansas City, Kansas

FOR SALE—REASONABLE

SALSTROM MULTIPLE CARVER
8" Centers - Ball Bearing - 220 - 3 H.P.
18-Head

MASON FURNITURE CORPORATION
Box 432 Point Pleasant, West Va.

Wallace 16" Band Saw
Black Bros. No. 22D Bench Model Glue Spreader, 26" Dbl.
Clement 16" Jointer, D.M.D. Rd. Head. B.B.
Yates-American No. 199 24" Ball Bearing Jointer, with Billstrom Feed Attachment.
Vonnegut 6" Ball Bearing Moulder.
Yates-American C-88 8" Ball Bear. Moulder.
Hermance No. 50 10" Moulder.
Hall & Brown No. 215 8" Moulder, B.B.
Northfield 24" Ball Bearing Planer.
Delta 13" Ball Bearing Planer.
Yates-American No. 177 Planer.
Berthelsen Hot Plate Press, 3 openings, 44" x 72".
American No. 1 Single End Tenoner.
American Columbia Model 36" 2 drum Sander.
Linderman Jointer, 8'
Yates-American Bench Model Lathe.
New Britain Chain Mortiser.
Paxton 8 track Nailer, closed back, 1951 model.
Morgan 8 track Nailing Machine, closed back, clinching bar.
Fay & Egan 12 Spindle Vertical Borer
Onsrud No. 113E Router.
Onsrud No. W244 Spindle and Vacuum Pulley Assembly.
Carter Guide Line Light

W. W. THAYER COMPANY
719 North Hills Drive St. Louis 21, Mo.
Phone: EVergreen 5-7483

ONLY TOP VALUES!

75"x50" Ten Opening PLYCOR Hot Plate Press, 200 psi, complete with 80 cauls and full equipment. Equivalent to "like new" condition.

66"x20' TAYLOR PANELFLOW. Perfect condition with NEW spreader.

VONNEGUT 6" Electric Moulder with Hopper feed.

CURTIS Double Belt Sander 10' cap.

YATES-AMERICAN 9" ELECTRIC Moulder.

PORTER 24" B.B. D.M.D. Power Facer

BUSS 36" Single Cabinet Planer.

WOODS 808M 4" Production Moulder.

HANDY and BELL Pneumatic Clamps, practically new.

WHITNEY Tilting Arbor Saw, Model 77.

YATES-AMERICAN G77 and G2 Chain Feed Ripsaws.

If interested in good clean machines, let me have your inquiry.

EDWARD B. MUELLER
5320 Montgomery Road
Cincinnati 12, Ohio

Oliver No. 61 24" and 30" direct drive Planers, Sectional

Porter & American 24" ball bearing 3 knife round head jointers

Baxter Whitney No. 139 and 34A ball bearing double spindle Shapers with frequency changers.

Send Us Your Inquiries

ERIC RIEBLING CO.
2827 PHILIP AVE.
NEW YORK 65, NEW YORK

Builders of special banding machines for inserting T moulding as used in the manufacture of dinette tops.

FOR SALE

Wilkins Challoner #50 Double End Tenoner 66" Long, 70" Load Space, 4" Thick. Motor driven, copes, saw and tenon heads, V-belt driven.

Inquire

PICK MANUFACTURING CO.
West Bend, Wis.

FOR SALE

Ekstrom Carlson Router, Model 232—Serial E 232-226, 5 H.P. Motor—220 V., 3 Phase, 60 Cycle. A-1 Condition. Available for Inspection at

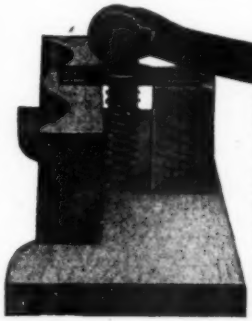
DURA-CRATES, INC.
940 East Michigan St. Indianapolis 2, Indiana
Melrose 7-4558

FOR SALE

One 42" band rip saw carrying a four inch band saw; belt drive—babbitt bearings—chain feed—3 saws included—as taken out of service $200 FOB Howell, Michigan.

THURESON LUMBER CO.
HOWELL, MICHIGAN

DETROIT SAFETY SHAPER FORM CLAMP



A safety Shaper Clamp used in clamping material to pattern when shaping. Protect your workman with this clamp. It helps the morale of the men and Quality of Product.

WOODWORKERS' TOOL WORKS

220 S. Jefferson St. Chicago 6, Ill.

WOODWORKING PLANT
Sale or Lease

Small Southeastern town—35,000 sq. ft. brick and steel, sprinklered plus 6-track 90 ft. new Moore Dry kilns and cooling shed. Fully equipped now running. New Office. Excellent labor, taxes, insurance rates, etc. Ideal for furniture or other mfg. Owner will cooperate in getting you established.

Write Box 995
c/o WOOD WORKING DIGEST
WHEATON, ILLINOIS

Billstrom 24" motor driven Feeder and Jointer
Greenlee No. 532 motor driven Single End Tenoner
Mattison No. 303—6' Auto. Hyd. Stroke Sander
Greenlee No. 227—Hollow Chisel Mortiser—like new
Buess Tilting Table Variety Saw
Berlin No. 282 Band Rip and Resaw—Good cond.
Doig Corrugator machine—St. Joe Stapler
Hawker Dowel Lathe up to 2"

DAVID V. LUNDBERG
3415 Higherest Road Roskford, Ill.

USED AND REBUILT MACHINES
PRICED FOR QUICK SALE FROM STOCK

JOINTER—20" No. 1 American ball bearing
24" American Bilstrom Swingout Feeder
30" American-Swingout Feeder
12" H.B. Smith direct motor drive

MORTISER—New Britain Chain Saw
Fay & Egan No. 510 hollow chisel, like new
Sidney Hollow Chisel Figure 702, 2 rates of feed thru gear box-capacity ¼" to ¾" compound table

TENONER—Fay & Egan No. 2 coupled drive upper-lower copes & C.O. 3 HP.
Smith Single End babbitt bearing upper-lower copes & C.O. 5 HP

MOULDERS—8" & 10" No. 50 Hermance babbitt bearing
9" No. 375 Fay & Egan ball bearing
6" No. 208 Fay & Egan ball bearing
E-I Hermance ball bearing four-side
Yates No. 108-10" 4-side moulder with 50 HP motor
Childs 2" x 4" ball bearing electric moulder

SURFACERS—24" x 6" No. 490 Fay & Egan ball bearing single
30" No. 32D Smith ball bearing single
No. 2 Fay & Egan 24" single

SHAPER—No. 9 Buss two spindle ball bearing direct motor drive
No. 252 Fay & Egan Single Spindle ball bearing
No. 2½ American Ball Bearing, Double Spindle

BAND SAW—30" No. 155 ball bearing V-belted drive Fay & Egan
36" No. 50 Fay & Egan ball bearing

CUT-OFF SAW—Multiplex 5 HP Radial Saws-Radial arm ball bearing
No. 452 Greenlee Automatic
Mereen-Johnson Ball bearing, chain feed, double cut-off, 4 motor direct drive

RIP SAW—No. 75 Diehl Chain Feed Straight line ball bearing
Sinker-Davis Self-feed, 3 rates of feed

VARIETY SAW—Crescent direct motor drive-tilt table Tannewitz tilt table

SWING SAW—Preston & Anderson No. 35 ball bear. air operated stroke, 5 HP mtr.
Holmes 1½ HP motor

SANDER—Schipper-automatic Turning Sander-head & tail stock for automatic loading
No. 393 Fay & Egan 42" Endless Bed 3 drum
No. 413 Yates - 30" 2-drum Endless Bed

CLAMP—Black Bros. 48" x 68" air operated sash & framing, looks like new

LATHE—No. 55-C Mattison Automatic, ball bearing, 30" length with 10 HP motor

CARVING MACHINE—Oliver No. 310-10500 RPM spindle-motor drive

SHAVING EXHAUSTERS—Buffalo 30" single
Buffalo-double, tandem drive-30"

WILL PAY CASH FOR
Single Machine or Entire Plant. All makes, models, sizes
Write, wire or phone Today!
FAY & EGAN CO. • Tele **PL-0730**
2023 Eastern Ave., Cincinnati 2, Ohio
Factory Rebuilt Machinery

FOR LEASE OR SALE

Wilkin Challoner BB Electric Double End Tenoner Fully Equipped
FOR SALE:
Famous BB Single End Tenoner
Oliver 24"x7" Planer
Whitney 110 Shaper, canvas belt, DR 2 HP BB
Ekstrom Carlson 232 Router 2 HP BB
Edge Sander BB
Flat Belt Sander & 3 HP BB Motor
Niagara Brush Sander 24 Brush Capacity
Union Embossing Machine & 3 Die's 2 HP
Two Way Air Case Clamp 8 Cylinder—Capacity 42H x 36W x 24D
Bede Hot Lacquer Machine
4 Wilcox Overhead Chain Type Conveyor Systems with Dry Ovens
Heller Carton Stapler
Tag-Heppenstall Moisture Meter
National Single Pad Air Sander & Rubber.
Handy 1 Way Assembly Clamp on Wheels
1/3 HP BB Grinder Bradford
Air Motor for Mixing Filler DeVilbiss
12" Saw Dust Blower System with Pipe
24" Saw Dust Blower System with Pipe
30 HP GE Motor 1200 RPM & Magnetic
10 HP Westinghouse BB 1800 RPM Motor
Air Clamp 3 Way
Large Size Coke Machine

V. D. RIDER, JR.

MONTICELLO NOVELTY CO., INC.
Flora, Indiana

FOR SALE

No. 284 Wysong & Miles Mortiser complete with standard equipment, 5 HP, 220-3 phase, 60 drive motor, and ½ HP, 220-3-60 cycle power feed motor. Serial No. 6144. Like new. $850.00

20" Fay & Egan Jointer direct drive by 5 HP, 220, 3 phase, 60 cycle motor, babbitt bearing. $250.00

HART INDUSTRIAL SUPPLY CO.
726 W. Grand Ave., Oklahoma City, Okla.
Phone REgent 9-2541 P.O. Box 1925

Yates-Am. A-20 B.B. Planer Double Profile.
Newman No. 500 B.B. Planer Double Profile.
Newman No. 111 B.B. Planer Bottom Profile.
Newman No. 97-A B.B. Planer Bottom Profile.
Woods No. 404 D Elec. Double Profile. Planer.
American No. 77B Planer 8 K Double Profiler.
Yates-Am. C-55 Elect. 9" Moulder 4 Side.
Vonnegut 12" Electric Moulder 4 Side.
Vonnegut 6" Electric Moulder 4 Side.
Whitney No. 24 36" Double BB Electric Surf.
Whitney No. 29 36" Single BB Electric Surf.
Yates No. 177 30" Double Roughing Planer.
Mattison No. 202 Straight Line Ripsaw 15 HP.
Diehl No. 75 Straight Line Ripsaw 15 H.P.
Hermance No. 35 Straight Line Ripsaw 10 H.P.
Williams & White 3x6 Hot Plate Press.
Porter No. 710 Surfacer or Facer Planer.
Porter Hydracut Automatic Cut-off.
Diehl No. 660 Continuous Feed Glue Jointer.
Jenkins No. 95 Double End Tenoner ELECTRIC.

These and many others in our warehouse.

R. K. HASKEW & CO., INC.
CHATTANOOGA 5, TENNESSEE

Fine, Medium Priced *Tru-Form* SHAPER CUTTERS

Only Boice-Crane makes Tru-Form Cutters. Tru-Form denotes precision shape which never changes in grinding during the life of the cutter, plus flattened-arc relief for faster cutting and reduced heating, adding up to 50% longer life. Razor sharp. Deep-hardened tool steel. Ask dealer or us for Bulletin S-1 listing over 50 shapers stocked, including sets for sash, door and cabinet work.

Sold by industrial and woodworking supply dealers everywhere

BOICE-CRANE COMPANY
931 Central Ave. • Toledo 6, Ohio

IMMEDIATE DELIVERY

New Tannewitz Type U M.D. Tilting Arbor Saw
New Delta 3 H.P. 3 phase Radial Saws
New Delta 2 H.P. single phase Radial Saws
New 20" Delta ball bearing Band Saw
New 36" Delta ball bearing Band Saw D.M.D.
New Unisaws single and three phase
New Parks 12" Planer
New Milbury Bench Tenoner D.M.D.

AAA SAW & TOOL SERVICE & SUPPLY CO.
1401 W. Washington Blvd. Chicago 7, Ill.

FOR SALE

One Ekstrom-Carlson No. 111 Edge Belt Sander, I HP motor, 220 volt, 3 phase, mounted on portable steel base. Like new.

HANCOCK WOOD PRODUCTS
IRON MOUNTAIN, MICHIGAN

Monarch D.M.D. Hollow Chisel Mortiser, 1½ H.P., 220 Volt, 60 Cycle, 3 Phase, Compound Table, Like New. $350.

A-A-A SAW & TOOL SERVICE & SUPPLY CO.
1401 W. Washington Blvd. Chicago 7, Ill.

Only GENUINE parts
WILL KEEP YOUR
Jenkins
MACHINES
IN TOP CONDITION!

GENUINE JENKINS PARTS ARE MANUFACTURED AND STOCKED EXCLUSIVELY BY

JENKINS MACHINERY CO.
DIV. Curt G. Joa INC.
SHEBOYGAN FALLS, WIS.

CYCLONES

65" Day—like new $200
70" Day—like new $250
75" Day—Excellent Cond. $275
80" Day—Excellent Cond. $300
No. 40 Bayley BB Exhaust Fan $250

BOX FACTORY MACHINERY
Just taken from service
Older Models, but in good condition

Rogers 90" Knife Grinder, M.D...$400.00
No. 145 Mereen Johnson Resaw $1000
No. 315 Mereen Johnson Matcher ..$200
No. 421 Mereen Johnson Recesser ..$175
No. 40 Mereen Johnson Squeezer ..$350
No. 445 Mereen Johnson Rip Saw ..$150
No. 460 Mereen Johnson Cut off Saw $200
Hooper 2 Color Printer $350
Nailing Machines from $225

HARRIS MACHINERY CO.
501 30th AVENUE S. E.
MINNEAPOLIS 14, MINN.

Motor Driven
FREQUENCY CHANGERS
IN
STOCK

Sizes: 10 to 60 KW
Outputs: 90-100-120 and 180 cycle
Reliably Rebuilt
1 YEAR GUARANTEE
Attractively Priced
SAVE MONEY when you BUY any ELECTRICAL EQUIPMENT
We actually have one of AMERICA'S LARGEST STOCKS
Send us your Inquiries.

L. J. LAND, INC.
Est. 1910 (45th Year)
Corner Lafayette & Grand Sts.
New York 13, N. Y.
CAnal 6-6976

BETTER PAY DAYS for YOU

LEARN
FURNITURE PRODUCTION
AT HOME . SPARE TIME!

There is great demand for efficient production men. Now you can learn quickly Time Study, Cost, Production Scheduling by the famous Klok Institute method. Klok Graduates get and hold top positions. Write for free booklet, no obligation, of course.

FREE BOOKLET GIVES FULL INFORMATION

KLOK INSTITUTE (Established 1929)
154 Louis St., N.W.
Grand Rapids 2, Michigan

FOR SALE
VENEER-PRESS

Wetzler-Sectional - Veneer-Press. Thirteen sections, 50" wide, 24" high. 5" I Beam, 5 Spindles Side opening feature. In A-1 condition.

TOPCRAFT, INC.
4207 Menlo Drive Baltimore 15, Maryland

NEW & USED REBUILT

Bandsaws, planers, tenoners, mortisers, sanders, self-feed rip saws, clamps. Send for our complete stock sheet.

AMERICAN MACHINERY EXCHANGE
2044 W. Lake St. Chicago, Ill.

FOR SALE
AT REALISTIC PRICES

Jenkins No. 105A chain feed double cut-off saw
Jenkins No. 95 60" electric double end tenoner
Yates C55 9" electric moulder—hopper feed
Yates No. 413 31" two drum endless bed sander
Yates No. 213 electric glue jointer
Root D200 48" hydraulic horizontal borer
Oliver 48" vertical multiple spindle borer, B.B.
Andrew 42" vertical multiple spindle borer
Mereen-Johnson No. 477 automatic cut-off saw
Buss No. 4, 30" single planer, B.B., D.M.D.
Oakley model G-2 handblock belt sander
Morgan 8 and 9 track nailers
Saranac No. 1 & 1-RA corrugated fastener drivers
Dodds 12 spindle dovetailer

ROBERT A. MARTIN

549 West Randolph Chicago 6, Illinois
Telephone Dearborn 2-2296

Frequency Changer, G.E., 50 K.W., 220 or 440 Volt, 100 or 120 Cycles with matched magnetic controls. Rewound in new condition.
Taylor Clamp Carrier, 9 H.P. Motor. Capacity 160 chair seats or 40 pieces 40"x80". Half price on above for quick disposal.

NORTHWEST CHAIR COMPANY
Box 1115 Tacoma, Washington

Woodworking Executive Available

Age 35—broad experience in buying, selling, designing, manufacturing and complete management. Want to locate in Florida, South West or West.

Box No. 105
c/o WOOD WORKING DIGEST
Wheaton, Ill.

MONTHLY SPECIALS

Bell No. 80 Multiple Head Mortiser
Y-A 9 and 10" Electric Moulders
E-C No. 112-A Edge Belt Sander
Y-A 15" A66 Planer and Matcher
Diehl No. 89 Veneer Splicer
42x120" Francis Hyd. Press
Plycor Cont. Feed Lumber Core Press

FRANK J. HOFFMANN

5511 N. Glenwood Ave. Chicago 40, Ill.
Sunnyside 4-0470

PLYWOOD SALESMAN

Experience desirable or adequate wood working background and sales aptitude. All replies confidential. Send resumé, details - age, experience, earnings, salary expected.

BOX 999
c/o WOOD WORKING DIGEST
Wheaton, Illinois

WANTED

Job as Factory Manager - Production Manager or Superintendent
Can Furnish Record of Performance in all Phases of Furniture Case Goods and Furniture Dimension Production
Capable of Directing all Operating Departments - Purchasing - Labor Relations - Union Negotiations

Available on Short Notice - Location Open

BOX 997
c/o WOOD WORKING DIGEST,
Wheaton, Ill.

POSITION WANTED

Broad experience in Administration, Cost reductions, Quality control, Labor relations, Purchasing, Scheduling, Engineering, Fabricating veneers, Milling, Assembling and finishing wood products.

Address Box 103
c/o WOOD WORKING DIGEST
WHEATON, ILL.

WANTED

Double end tenoner
Double end trim machine (heads not saws)
Rubber roll glue spreader.

Address replies to Box 101
c/o WOOD WORKING DIGEST
WHEATON, ILLINOIS

HACKETT

QUALITY WOODWORKING MACHINES

for Profitable Production!

New Ball Bearing Motor-Driven Machines

IN STOCK FOR IMMEDIATE SHIPMENT

Hand Jointers 6" to 16" — Mitre Saws — 24" Single Planers
Self Feed Rip Saws — Radial Arm Saws — 36" Band Saws
Complete Line Delta Machines — Kindt-Collins Sanding Equipment

"HACKETT REBUILT"—QUALITY MACHINERY

BAND SAWS
Oliver No. 173. Jig Saw, 36". Motor drive
Tannewitz GH 36" Ball Bearing, D.M.D.
Crescent 36", V-Belt, Motor Drive
American 42", V-Belt, Motor Drive
Crescent 32" Ball Bearing V-Belt M.D.
American 30" Ball Bearing V-Belt, M.D.
Silver 20", V-belt motor drive

BAND, RIP AND RESAW
McDonough 62", vertical band resaw
Mershon 42" Twin Band Rip, B.B.

BORING MACHINES
Bell No. 24B Double End Boring, Chucking & Cut Off
Greenlee 8-ft. No. 386 Universal Spindle, M.D.
Rogers single spindle, horizontal
McKnight No. 26-F, double end, M.D.

BLOWERS AND FANS
American size 40 Type E "TWIN" & motor
American No. 80-E with 40 H.P. coupled motor

CLAMPS—GLUEROOM EQUIPMENT
Handy No. 71 Revolving Case Clamp
Greenlee No. 599 frame and furniture clamp

FILING ROOM MACHINERY
Hanchett 76" style DN Knife Grinder, M.D.
Covel Hanchett OK 42" Knife Grinder, M.D.
Wardwell Y-18 Circular Saw Filer, M.D.

JOINTERS
Diehl No. 66, continuous feed, direct M.D.
Yates No. 199, 20" round head V-belt M.D.
Porter No. 300 CM, 12", D.M.D., B.B.
Porter Style C 12" Round Head, M.D.
Meyers continuous feed, V-belt, M.D.

LATHES
Oliver No. 25 20"x12" Bed Pattern Maker Lathe
Oliver 12"x5" Bed, Hand Carriage

MORTISERS
Sidney No. 707 Chain automatic feed M.D.
Sidney 705 Hollow Chisel Automatic feed, M.D.
Whitney No. 67 Oscillating Belt, M.D.
New Britain No. 2 Chain, with motor

MOULDERS
Yates-American C-89, 12" All Electric
Woods No. 134-M 4" Electric
Newman 4x4, All Electric
Yates No. 108, 10" belt drive coupled motor
Yates-American C-89, 6" All Electric
Woods No. 132 M 6" Electric

NAILING MACHINE
Diehl No. 40 16 track 40" open back
Auto Nailer "Blue Model," M.D.

PLANERS
Whitney No. 32 24" Single, Ball Bearing, M.D.
Whitney No. 32 30" Single, Ball Bearing, M.D.
Yates B-2 36" double, M.D.
Yates No. 156 20" round head, M.D.
Yates No. 177 30"x12" double, M.D.
American No. 80 15" double, heavy duty
Parks 12"x4" single, ball brg., V-belt drive

ROUTERS
Onsrud W-240 Ball Bearing, Vert., M.D.
Ekstrom-Carlson No. 126, B.B., M.D.

SHAPERS
Mosk No. 7 Single, Ball Bearing, Motor drive
Whitney No. 134 double spindle, D.M.D.
Porter No. 103 single, ball bearing, M.D.
Onsrud WA-50 Automatic, motor driven
Whitney No. 165 S.S. motor on arbor
Whitney No. 47A, dbl. spdl., short belted m.d.
Greenlee No. 180, double spindle, D.M.D.

SANDERS
Yates-American No. S-23 43" 3 dr. roll feed D.M.D.
Yates No. 421 6-drum with motors
Fay & Egan 30" 2-drum end. bed., M.D.
Yates-Amer., No. 433 43" 3 dr. End Bed Sand., D.M.D.
American No. 2 Disc and Spindle Combination

MITRE SAWS
Delta 10" Tilt table with motor
Whitney No. 61, tilting arbor, D.M.D., B.B.
Walker Turner 10" Tilt Arbor, B.B., M.D.

CUT-OFF SAWS
DeWalt Model GER 5 HP, long arm
Multiplex Model 50-A, 5 HP motor
Sidney No. 720 Straight Line, motor on arbor
Oliver No. 94-D Straight Line Motor on arbor
American No. 51 swing saw, M.D.
Multiplex No. B-60 radial arm, 7½ H.P. motor

RIP SAWS
Mattison 202, chain feed, direct motor drive
Mattison 207, chain feed, direct motor drive
American self-feed with motor
Greenlee No. 426 Roll Feed with motor

TENONERS
Jenkins No. 95 double-end, D.M.D.
Greenlee No. 530 Single End, belted motor drive

This is only a partial list—send or call your inquiries

1965 E. MILWAUKEE — DETROIT 11, MICHIGAN

Telephone TRinity 2-6442

SCOTCH PRICES

(Denotes Better Buys from Bickler)

Bandsaw, 36", ballb. F&E No. 50, 5 h.p.
Belt Sanders: Mattison No. 134; Mattison No. 124, 8' automn., 5 h.p.; Mattison No. 111, scroll.
Blowers & Cyclones, various sizes.
Borer, vert. Greenlee No. 371, 12', power feed.
Borer, vert., Greenlee No. 369, ballbearing, 36".
Borer, horiz., Greenlee No. 370, 72", 6-spdles., power feed.
Case Clamp, revolv., Union, 48"x27"x48".
Clamp Carrier, Palmer 16-sc., 132"x30" cap., 128 clamps.
Clamps, assembly various sizes
Clamp, drawer, Handy No. 50, opens 40".
Clamp, end, Handy No. 421, 90"x48", air
Dowel Machines: Tannewitz, Hawker & Jenkins.
Glue Jointer, ballb., F&E No. 429, 3-mtrs.
Lock Corner Cutter, Superior, single-end, hand fd.
Lock Corner Cutter, dbl.-end, Morgan, power feed.
Mortiser, h.c., vert., F&E No. 172, foot feed.
Mortiser, vert., h.c., F&E No. 379, automn.
Moulder, 4-side, Hermance 8", motor.
Moulder, ball-bearing, Smith 6", 4-side motor.
Nailers, Morgan & Doig, closed and openback.
Planer, sgl., F&E No. 156, 36" ballb., 2-motors, electric grinder.
Planer, sgl., Cordesman 24", ballb., 2-motors.
Planer, single, Yates-American B-7, 30"x7", 6-roll, fast-feed, ballbearing, built-in motors.
Planer, sgl.-cab., 30" Whitney No. 32, ballb., mtr.
Planer, facing, Porter 24", with Jackson & Church 4-post feeder, two mtrs.
Printer, Boxboard, Hooper 20", chain-feed.
Ripsaw, self-fd., ballb., F&E No. 504, motor.
Ripsaw, gang, Hoosier, ballb., 14" arbor, self-fd.
Routers, elec: E-C No. 434, 5 h.p.
Sander, 3-dr., e.b., Yates No. 431, 43", hoods.
Sander, sgl.-dr., Parks 24", power-feed.
Sander, single drum, Yates-Am. No. 411, 42", mtr.
Sander, brush, Vonnegut, adj.-arm, 2 h.p.
Sander, 36" disc, 24", drum.
Saw, double end, Bel. mitre, 72".
Screw Driver, Reynolds, motor.
Shapers, dbl.: Whitney and Advance, m.d.
Spray Booths, 4' & 6' DeVilbiss & M&E, modern.
Stapler, 4-heads, Saranac, 60", open-back.
Sticker, 4-s., Hermance 5", ballb., 5 h.p.
Tenoner, sgl.-end, F&E No. 505, ballb., electric.
Veneer Presses, 5-sects., Francis 45".

EDGAR G. BICKLER COMPANY
6444-52 Sherman St., Mt. Washington, Cincinnati 30, Ohio
Telephone: BEechment 7337

GUARANTEED USED MACHINERY

BAND SAWS
Delta 20", with motor, new
American 36", ball bearing
Walker-Turner 16" M.D.

BAND RESAWS
American No. 111—54", opens 16" wide
McDonough 54", with motor

BOX MACHINERY
Doig 8-track Nailer with Chucker
Doig 6-track and 11-track Nailers
Hall & Brown Matcher, with motor
Connell & Dengler Single Color Printer
Morgan Lock Corner Cutter

CUT-OFF-SAWS
Crescent 5 H.P. Radial
Yates-American No. G-44—5 H.P. with 2—8' steel tables

JOINTERS
Yates-American 6" M.D.
Famous 16" M.D.
American 30" with Feeder M.D.

KNIFE GRINDERS
Rogers Type F 32" Cup M.D.
Dependable No. 99—A5—36"

LATHES
Y-A No. T5—30" Auto. 175" Heads

MOULDERS
Yates-American No. C-3A-4" side ball bearing with 20 HP motor
Yates C-3-4" 4 Side
American No. 22—14" 4 side
American No. 505, 12", Belt Drive

PLANERS
Powermatic 12" and 16"
Delta 13x5" B-C 12x4
Crescent No. P 24-24x8" M.D.
Berlin No. 185—30x8 Dbl. M.D.

RADIAL SAWS
Delta 1-2-3 & 5 HP
Dewalt 12 HP—20" blade
3 HP DeWalt old style

RIP SAWS
Dependable No. 111 12" arbor 15 HP motor

SANDERS
Yates No. 427 Belt M.D.
Smith 43"—3 drum endless bed M.D.
Yates-American No. 401—43" Motor drive
Yates No. 431—49"—3 drum Endless Bed

SAW TABLES, VARIETY
Delta 12" Tilt Arbor 5 H.P. New
American Double Arbor
North Field 5 HP Tilt Arbor

SHAPERS
Crescent Single Spindle, 2 HP
Whitney Double Spindle, 5 HP motors

TENONERS
American No. 1 and No. 2½ Single End
Wilkins-Challoner Double End

VENEER PRESSES
Francis 54"x120"—7 Cross sections
Francis 38" Sectional (14)

MISCELLANEOUS
Rogers No. S-4 auto. Cir-Saw Sharpener
DeWalt Stone Cut-off Saw 8 H.P. Motor

McDONALD MACHINERY COMPANY

1537 N. Broadway **CE 1-9360** **St. Louis 6, Missouri**

BENDING MACHINES

Handy Bending machines, 40", 6 different size rolls

BORING MACHINES

Andrews 6 sp. horiz. belt drive
Greenlee Single MD Vertical
Greenlee No. 363 Vertical 6 sp. BB DMD
Moak 2 spindle Radial, Silverstreak
Root Single MD vertical
Root single vertical MD, Motor Feed
Root Vertical Hydraulic straight in line 7 sp. Model C H
Towsley 2 spindle, 2" to 16" with foot tr.

COMPRESSORS

Ingersoll-Rand, 5 HP
Westinghouse 5 HP

DOVETAILERS

Dodds 10, 15, 20 spindle

DOWEL MACHINES

Hawker No. 2 All Ball bearing & roller bearing VBD

JOINTERS

American 12" Wedge Bed BB
American 16" Wedge Bed BB
Crescent 12" DMD
12" Colloday L. Powers, H. B. Smith, Crescent, Sidney
Northfield 12" DMD
Oliver 16" BB—8 ft. Table
Yates-American 16" DMD

LATHES

Mattison 55C, BB, live tailstock

MORTISERS

Greenlee No. 228, Belt Drive
New Britain No. 2 and 7
Northfield chisel mortiser, motor driven
Wallace chisel mortiser, motor driven

MOULDERS

Sherrill 6" MD BB
Yates-American, 18" DMD C55, BB

PLANERS

American Saw Mill 24" CMD 5 HP
Greenlee No. 120 30" Double DMD DMF knife grinder
Monarch 20" CMD 5 HP with starter, New $675.00
Northfield 24" single, MD motor fd. No. 5
Whitney No. 32 36" BB CMD Knife Grinder
Whitney No. 29, 40" CMD, BB

ROUTERS

Ekstrom-Carlson 434
Onsrud Air
Onsrud 240
Porter No. 666

SANDERS

Beach Hand Block MD 2 HP
Mattison 176 osc. 5 HP
Newton Edge Sander
Oakley Model H Drawer DMD
Peerless 9", 14" and 20" horiz. & vert.
H. B. Smith 3 drum 4 motors No. 404 BB
Vonnegut vertical drum sander
Wysong & Miles, Oakley, Mattison belt

SAWS

Fay & Egan No. 558 MD 1½ single phase
Toby T-12 5 HP motor
Crescent (extension base) V-belt drive
Tannewitz No. JDR DMD TA-revolving arbor 5 HP motors
Walker-Turner TA 5 HP motors

SAWS - CUT OFF

Heston & Anderson No. 5, No. 25 & No. 55
Multiplex 5 HP DMD BB
Mattison No. 244 DMD BB 5 HP motor
Porter No. B43
Wallace 2 HP DMD BB
DeWalt 1 to 5 HP DMD BB

SAWS - BANDSAWS

36" American, Tannewitz, Crescent, Oliver
30" VB Drive Crescent
27" Crescent Band Saw
32" Crescent guarded BB VBD
Northfield BB & DMD 20" to 36"
Yates-American B36 fully guarded DMD

SAWS - RIP SAWS

American No. 25 Chain in Table
Mattison No. 202 straight line
Tidey 48" carriage
Tidey 30" carriage & boring attachment

BAND RIP & BAND RESAWS

Yates No. 281 Band Rip

SAWS - VARIETY

Beach DMD 5 HP Tilt Arbor
Delta 5 HP Tilt Arbor
Northfield Tilt Arbor, DMD, 5 HP
Northfield Tilt Top DMD
Fay & Egan DMD Tilt Arbor 5 HP
Pryibil No. 10 Tilt Top, BB, all Alum. gages.
Tannewitz Type U 5 HP DMD 36" Rip Cap.
50 other makes to choose from

SHAPERS

Advance Single spindle, clutch-driver, BB
American (S30) Single spindle, 5 HP & 3 HP
Collady SS BB 5 HP
Oliver No. 287 large top 7½ HP
Onsrud No. 200
Collady SS BB 5 HP
Whitney BD No. 89 single, large top
Whitney No. 34A Double

VENEER MACHINERY

St. Joe MD, 66" Trimmer
Greenlee Sash & Door No. 601

★ ★ ★

Endless canvas belts, large variety of lengths and widths, also sand belts for Skilsaw, Porter Cable and Vonnegut brush sanders. Accessories and supplies, tremendous lot both new and used. Also band and resaw blades.

WE PAY CASH FOR ENTIRE PLANTS OR INDIVIDUAL MACHINES

American Machinery & Motor Co., Inc.

22 HOWARD ST. NEW YORK 13, N. Y.

MODERN MACHINERY BARGAIN PRICES

Vonnegut 6" Electric Ball Bearing Moulder
Hermance E-1—6"x4" B.B. Molder, Belt Dr.
Yates-American No. 35—9" Elect. Moulder
Yates-American C89—6" Electric Moulder
Whitney No. 32—30" Motor Drive Ball Bearing Single Cabinet Planer
Diehl No. 75 DMD S/L Ripsaw
Mattison No. 207 DMD S/L Ripsaw
Yates-Amer. G77 DMD Ch. Fd. S/L Ripsaw
McDonough 44" and 54" Vertical Band Resaws, motor drive
Porter C43 DMD S/L cut off saw with tables
Whitney No. 77 Mtr. Dr. Tilt. Arbor Saws
Whitney No. 134 DMD B.B. Dbl. Sp. Shap.
Whitney No. 295 DMD B.B. Auto. Shaper
Smith 42" Motor Dr. B.B. End. Bed Sander
Yates-American S23—49" DMD Ball Bearing, 3-drum Roll Feed Sander
Curtis No. 43-RI DMD Hydraulic Auto. Stroke Sander
Mattison No. 157 DMD Double Belt Stroke Sander, 8 ft.
Oliver No. 125D DMD Single End Tenoner
Crescent P18—18" DMD B.B. Single Planer
Whitney No. 24—30" M.D. B.B. Dbl. Pl.
Wilkin-Challoner B.B. M.D. Sash Sticker
Greenlee No. 386—72" Vert. Gang Borer, B.B. M.D.
New Britain No. 2 M.D. Chain Saw Mortiser

GUSTAFSON & SCOTT MFG. CO.
1637 N. Lowell Ave. Chicago 39, Ill.
Phone SP 2-8680

GOOD USED MACHINERY

BORERS. Greenlee 5' Vert. 5 spd. auto feed
Greenlee 12' Vert. 20 spdles. 15 HP, just 3 yrs. old
Jenkins auto. Stiles & Rail motor, good
Pringle & Brodie 42" horiz., 3 pr. rad. spdls. New
CUT OFF SAW. Beach No. 1, 12"x24". 2 yr. old.
DOVETAILERS. Dodds 10 & 12 sp. REBUILT.
GLUE JOINTERS. Yates No. 213 BB, mtrs. Barg.
HIGH FREQ. GEN. 3 KW Raytherm. Excellent.
5 KW Thermex, Complete with 3 pneu. presses
MORTISER. W&M No. 284 auto. h.c. nearly new.
MOULDERS. 6" Vonnegut BB, hopper feed. Good.
6" Mattison No. 262 bb, dmd nice lot mill. hds. inc.
10" Woods No. 134, bb belt dr. lag bed fd., large lot parts and hds., just 4 yrs. old.
Also good buys in 4 & 6" XL Moldmatchers.
RIPSAWS. Mattison No. 207, 10 hp v-ch., bargain.
Diehl No. 75 10 hp 2 hp fd. mtr. (glue joint wrk.)
ROUTER. Ek. Carlson No 327 3 hp 2spd. fine mch.
SANDER. W&M No. 302 dbl. belt., rever. dmd. Used little.
SHAPERS. 2 Mattison No. 182 dbl sp 8' tbls. 12½ hp dmd 120 cy. w/extra hds. Unusual buy here.
Onsrud S-9 auto. shaping attach. Never used.
SURFACER. Yates No. 177 Dbl. motors, rebuilt.
VENEER JOINTERS. Diehl No. 69 mtrzd. pres. bars, like new.
Sheboygan DMD, BB bargain.
Frank Diehl, dmd, bb. Good cheap jointer.
VENEER SPLICER. Diehl No. 89 rebit. & guar.
PRESSES. Handy No. 357 8x4'. Nearly new.
Francis 36x84 hydr. compl. inspt. run. lot ret. avail.
Partial list, send your inquiry. We have several nice lots equip. from liquidation sales in progress.

PALMER MACHINERY COMPANY
Drawer 87 Jacksonville, Fla.
Ph. ELgin 3-5747

CABINET SUPERVISOR

West Michigan firm is seeking an experienced man for case goods manufacturing.

QUALIFICATIONS:

1. Ability to lead and supervise men.
2. Broad knowledge of wood working equipment, methods of manufacturing, and finishing techniques.
3. Degree in Wood Technology preferred, but not an absolute necessity if offset by experience.

This is a permanent position for the successful man who can operate an efficient and economical department.
Salary is open.

Reply to Box No. 107
c/o Wood Working Digest
WHEATON, ILL.

REBUILT Whitney No. 24-A - 30" Double Cabinet Planer - about one year old.

Excellent condition. A BARGAIN!

BRANYAN & PETERSON, INC.
503 S. Second Street Memphis 2, Tenn.
P. O. Box 2573 Phone 37-7443

An old man was sitting on the porch of a little village store when a big, shiny car drove up with two strangers in it.

"Hey, there," one of them called out. "How long has this town been dead?"

The old man looked at them over the rims of his spectacles.

"Well, not long, I guess. You're the first buzzards I've seen."

Error of opinion may be tolerated where reason is left free to combat it.

Special Offering

A SELECTED GROUP OF MODERN — BALLBEARING DIRECT MOTOR DRIVEN MACHINES FULLY REBUILT & GUARANTEED

SOLEM No. SE 7-4, 49" four-drum endless bed sander
BELL No. 24A double end automatic boring, sawing & chucking machine
VONNEGUT 6" and 12" four-side moulders, fully equipped with cutterheads
YATES-AMERICAN No. 177 30" fast feed, heavy duty double roughing planer
PORTER-HERZOG 50" Power feed facing planer
GREENLEE No. 386-C, 6' 14-spindle, universally adjustable, vertical boring machine with power feed table.
G. M. DIEHL No. 55 chain feed, straight line rip saw
CHALLONER No. 80 chain feed double cutoff saw, traveling rubber hold-downs, capacity 6" to 102" between saws, 48" front of saws, 6" in thickness
BERTHELSEN 36"x72" single opening automatic, hydraulic hot plate laminating press, electric or steam heated
BLACK Model 22-D 50" & 62" double roll resin glue spreaders, variable speed
OAKLEY Model E-1, 6½' semi-automatic, double belt sander w/rever. controls for belts.
TANNEWITZ No. G-3 36" band saw, solid disk wheels.

WRITE or PHONE STate 2-7634

FADER WOODWORKING EQUIPMENT QUALITY

A. L. FADER & COMPANY
223 N. DESPLAINES ST. • CHICAGO 6, ILL.

REBUILT AND USED MACHINES

BAND SAWS
Tannewitz G 38" & Amer. B-36" B.B.

BORERS
Root G250 Foot Feed vertical single
Root G300 heavy duty hyd., vert., single
Root GMC light duty foot feed vert., mult.
Root CH 6-ft. hyd. vert. mult., univ.
Root C 6-ft. mech. vert., mult., univ.
Greenlee No. 369 3-ft. vert. multiple, m.d.
Root D210 heavy duty hyd., horiz. single
Root D200 4-ft. hyd. horiz. multiple

CARVERS
Minnesota No. 308E 16-spindle multiple
Porter & Gallmeyer & Livingston Sing. Sp.

CLAMPS — CLAMP CARRIER
Bell No. 70, 4x8 ft. air frame and sash
Handy No. 50 Drawer and Cabinet Clamp
Handy No. 444 two-way air clamp
Black Revolving Case Clamp
Lancaster No. 1000 Air Chair Clamp
Taylor 7½-ft. 40-sec. chain-type carrier

DOVETAILER
Dodds 15-spindle, spiral gear

JOINTERS — GLUE JOINTERS
6", 12, 16 and 20-in. hand jointers
Porter CM 16-in. hand jointer, direct, m.d.
Diehl No. 60 continuous feed glue jointer
American 20" with 4-Post Feeder, m.d.

LATHE
Imperial automatic turning, dir. motor-dr.

MORTISERS
Wysong & Miles No. 284, P.F., hollow chisel
New Britain No. 2 chain saw mortiser, m.d.
Enterprise ball-brg. pulley mortiser, m.d.

MOULDER
Y-A No. 26-A 12-in. 4-side, motor driven
Mattison No. 229, 9" All Electric, 4-side

PLANERS
Hall & Brown No. 222, 18" single head, d.m.d.
Whitney & Yates 24" single head, motor dr.
Buss No. 4-A 36-in. single head, direct m.d.

SANDERS
Smith No. 401, 42-in 3-drum endless-bed
Fay & Egan 48-in 3-drum endless bed
Nash No. 65 automatic turning sander
Wysong & Miles No. 300, 30" Comb. Disc. & Sp.
Peerless 20-in vertical belt sander, 5 h.p.

SAWS — CUT-OFF — SAW TABLES
Porter floor type, with table
DeWalt and Walker-Turner cut-off saws
Moak No. 16 D.M.D. Ball Bearing Saw
Y-A No. 8 tilt-arbor, roller table, motor dr.
Bell No. 216 cut-off saw, m.d.

SAWS — CHAIN-FEED and SELF-FEED
American No. 25 chain-feed rip, dir. m.d.
Hermance No. 300-G self-feed, ball b., m.d.

SHAPERS
Porter No. 200 SVM single, motor-driven
Whitney No. 165 single, direct motor driven
Whitney No. 134, double, motor driven
Buss No. 8 double, motor driven, ball bear.
Jones-Superior No. 105 dbl-end serpentine

MISCELLANEOUS
Diehl No. 69 Veneer jointer
Capital 65-in. veneer clipper
Doig single-head corrugated fastener
McKnight No. 88-S Saw & Chuck machine, m.d.
Grupp 25-in hyd-feed lock-corner mach.

B. M. ROOT CO. **York, Pa.**

New & Used Machinery Dealers

Arranged for your convenience.

FLORIDA
Jacksonville
Palmer Machinery Co., Drawer 87

ILLINOIS
Chicago
AAA Saw & Tool Service & Supply Co.
1401 W. Washington Boulevard
A. L. Fader & Company
223 N. Desplaines Street
American Machinery Exchange
2044 W. Lake Street
Gustafson & Scott Manufacturing Co.
1637 N. Lowell Avenue
Woodworkers Tool Works
220 S. Jefferson
Rockford
Joseph Behr & Sons, Inc.
1120 Seminary St.
David V. Lundberg
3415 Highcrest Road
P. D. Westman, P.O. Box 951

KENTUCKY
Louisville
L. R. Kenner, 3325 Trinity Road

MAINE
Auburn
W. D. Matthews Machinery Co.

MASSACHUSETTS
Boston
Boshco, Inc., 200 Boston Ave.
William H. Field Co.
327 Dorchester Avenue

MICHIGAN
Detroit
J. L. Hackett
1965 E. Milwaukee Avenue

MINNESOTA
Minneapolis
Harris Machinery Co.
501 30th Ave. S.E.

MISSOURI
St. Louis
McDonald Machinery Co.
1535 N. Broadway
Meisler Machinery Co.
7050 Forsyth
Thayer, W. W., 719 N. Hills Dr.

NEW YORK
Jamestown
Roland V. Reed
Web Machinery Co.
New York City
American Machinery & Motor Co., Inc.
22 Howard Street
Eric Riebling Co.
2827 Philip Ave.
Supreme Woodworking Machine Co.
50-52 Howard St.

NORTH CAROLINA
Asheville
S. W. Harrington, Inc., P. O. Box 230
Greensboro
Sutton Woodworking Machine Co.

OHIO
Cincinnati
Edgar G. Bickler Company
6444 Sherman Street
Buckeye Woodworking Equipment Co.
550 W. McMicken Ave.
Clifton Machinery Company
1023 W. Sixth Street
J. A. Fay & Egan Co.
2023 Eastern Street
Edward B. Mueller
5320 Montgomery Rd.
Woodward Machinery Company
309 E. Second Street
Columbus
Osborne & Sexton Machy. Co., Box 88

PENNSYLVANIA
Pittsburgh
Ervin Machinery Co., Inc.
124 Boulevard of Allies
York
B. M. Root Company

TENNESSEE
Chattanooga
R. K. Haskew & Co., Inc.
1916 Dayton Boulevard
Memphis
Branyan & Peterson, Inc.
503 S. Second St.
Wilco Machine Works
1301 N. Hollywood St.

WISCONSIN
Beloit
Woodtools Co., P. O. Box 144

Sutton GUARANTEED

BORERS
Wysong & Miles No. 283, DMD, Ball. Bear. Borer.

CLAMPS
Lancaster Air Operated End Clamp
Pico High Frequency Lumber Edge Gluer
40 Section Taylor Power Operated Clamp Carrier
Taylor 60 section clamp carrier
New Air Operated Frame and Chair Clamps
Taylor Panel-Flo Edge Gluer

DOVETAILERS
20 Spindle Dodds Dovetailer
Pico Automatic Double End Dovetailer
Wysong & Miles No. 290 Auto. Dovetailing Mach.

GLUE SPREADERS
54" Union Dble. Rubber Roll Resin Glue Spreader

GRINDERS
Corel-Hanchett Band Saw Grinder
Practically New Stetson-Ross No. 372 Grinder

JOINTERS
Porter 36", No. 300 Jointer, with Herzog Feeder
Diehl No. 660 Glue Jointer, Direct Motor Drive
Yates-American No. 213 Direct Motor Driven Glue Jointer
24" Yates-American No. 1 Jointer

LATHES
Yates-American 42" No. 74, mtr. dr., ball bearing
Yates-American 36" T-5, motor driven, ball bearing
Mattison 42" No. 57-D motor drive ball bearing
Mattison 36" MD automatic Lathe with 40" of new heads and carriers

MATCHERS
Woods 412M electric planer & matcher
Woods 501M Direct Motor Drive, Ball Bearing Hardwood Flooring Machine
American No. 33 Elec. End Matchers
Yates A-1 Planer & Matcher
Yates-American E-1 Electric End Matchers
Yates-American A-20 Planer & Matcher, Belt Drive, Ball Bearing.

MORTISERS
Greenlee 72" No. 212M 6-spindle direct motor drive, ball bearing mortiser.
Wysong & Miles No. 284 direct motor drive, ball bearing single spindle mortiser
Wysong & Miles No. 288 direct motor driven 6-spindle mortiser
Wysong & Miles No. 286 Hinge Seat Mortiser

MOULDERS
Yates-American 6" No. C-75 Electric Moulder
Newman 12" No. 412 Electric Moulder
Woods 808M 4" Electric Moulder
Yates-American 4" Type C-88 Electric Moulder
Yates-American 9" No. 35 Electric Moulder
Practically New Stetson-Ross 8" Type 48-K Fast Feed Electric Moulder, with hopper feed
Hayes Sash & Door Sticker w/Plowing & Boring
Newman 12" No. 27 BB Belt Drive Moulder

SINGLE PLANERS
Buss 40" direct motor drive, ball bearing
Greenlee 36" No. 110 Direct Motor Driven
Whitney 30" No. 32 Direct Motor Driven Ball Bearing Planer

DOUBLE PLANERS
Buss 36" Double Planer
Whitney 30" and 36" No. 24 direct motor driven ball bearing, with grinder and jointer

SANDERS
Wysong & Miles No. 171, MD., BB., Belt Sander
No. 277 Semi-auto. Belt Sander
Curtis Semi-Automatic Belt Sander
Mattison No. 124 Automatic Struke Sander
Pearson Waterfall Sander
Oakley Model E Double Sander

BAND SAWS
Mershon 46" Band Resaw
American 44" Band Resaw
American 40" No. 4 Band Resaw.
36" Yates-American Motor Driven Ball Bearing Band Saw
Yates-American Type V-54 Roller Brg. Band Resaw
Berlin 44" No. 283 Band Resaw

CUT-OFF SAWS
Beach No. 3 Roller table double cut-off saw
Fay & Egan No. 501-A Direct Motor Driven Ball Bearing Swing Saw
Eaglesfield Direct Motor Driven Ball Bearing Swing Saw
Porter Straight Line Cut-Off Saw

RIP SAWS
Eaglesfield Direct Mtr. Dr. Ball Brg. Rip Saw
New Marion Glue Joint Rip Saw, in stock here
Mattison No. 202 Glue Joint Rip Saw
Mattison No. 207 Direct Motor Driven Ball Bearing Glue Joint Rip Saw
American No. 15 Ball Bearing Chain Feed Rip Saw
Yates-American G-67 Chain Feed Rip Saw
Dependable No. 1 BB Gang Rip Saw, Power Feed

ROUTERS
Onsrud W-240 Electric Router
Yates-American U-9 Electric Router

SHAPERS
Whitney No. 251 Double Spindle Electric Shaper
Whitney No. 234 Double Spindle Electric Shaper
Onsrud W-125 Double Spindle Automatic Shaper
Onsrud W-125 Single Spindle Automatic Shaper

TENONERS
Wilkins-Challoner No. 720 Elec. Dbl. End Tenoner
Wilkins-Challoner No. 70 Elec. Dbl. End Tenoner
Greenlee No. 545 Electric Double End Tenoner
Yates-American No. 2½ Electric Tenoner

VENEER MACHINERY
Coe 76" Lathe
Coe 88" Clipper
Francis 76" Hydraulic Veneer Clipper
Dennis Veneer Taping Machine, Motor Driven
Frances 84x36" hydraulic veneer press, M.D., with booster pump and overhead cranes
Merritt 13 Plate redrier 60 by 36

MISCELLANEOUS
Salstrom 18-spindle Carver
Wardwell Saw Filer
Morgan 7-track open back nailer with clincher
Williams Motor Driven No-Knife Hog
New Raiman Automatic Knot hole borer & plugger
Leitelt Lumber Lift
Plycor 10 openings, 80"x60" Hot Press
Columbia, 3 and 4 openings, 100"x50" Hot Press

Sutton WOODWORKING MACHINE CO.

PHONE 2-4186 **SEDGEFIELD INN** **GREENSBORO, N. C.**

PRODUCTS INDEX

Compiled for quick reference and for your convenience, this handy index of products shows the pages on which you will find the items advertised in this issue. When writing to advertisers, it will be appreciated if you will mention WOOD WORKING DIGEST.

Abrasive Belt Splicer, 124
Abrasive Renewing Compound, 126
Abrasives, 112, 113, 117, 123 125

Band Saw Tires, 70
Bent Wood, 176
Bits, machinery, 139, 170, 182
Boring Machines, 12, 83, 96

Clamp Nails, 187
Clamping Machines, 59
Clamps, 97, 106, 140
Cutters, 20, 35, 72, 73, 164
Cutterheads, 14, 35, 65 164, 173, 208

Dovetailers, 96 139
Dowel Machines, 3, 175
Drills, 170
Dry Kilns 10, 36
Dust Control Systems, 84, 130, 135, 137

Edge Banding Equipment, 59
Electron Tubes, 149

Fastener Driving Equipment, Inside Front Cover, 33, 103
Fasteners, 15, 187
Finishes, 119

Generators, 16-17, 24
Glue Room Equipment 7
Glue Spreaders, 102
Glues, animal, 26
Glues, casein, 8-9, 26
Glues, resinous, 11 26, 29
Glues, resorcinol, 26, 29
Grinders, cutterhead, 168
Grinders, knife 91, 95
Guide Lights, 70

Handscrews, 97, 106, 140
Hardboard, 79, 82, 85, 153, 156
High Frequency Bonding Equipment, 16-17, 24, 142
Hogs, 67, 104, 141
Humidifying Equipment, 98

Jointers, 1, 39, 107, 189, 205

Knives 35, 61, 72, 167, 173

Lathes, 13
Lumber, 74, 157 158

Molders, 49, 181, Outside Back Cover
Mortise Chains, 128
Mortisers, 91
Motors, 27

Nailing Machines, 30, 138

Paint, 119
Paint Masks, 118
Planers, Inside Back Cover, 13 93
Planes, 105
Plywood, 144, 153, 156, 158
Plywood, molded, 159
Portable Electric Tools, 21, 43, 105, 122
Presses, plywood, 7, 142

Redwood, 18
Resaws, 93
Rough Mill Systems, 22-23
Routers, 43

Sanders, automatic stroke, Outside Back Cover
Sanders, belt, 4, 120
Sanders, contour, 126, 127, 129
Sanders, drum, 2, 115
Sanders, edge belt, 116
Sanders, endless bed, 2
Sanders, portable, 121, 122
Sash Pinners, Inside Front Cover
Saw Blades, band, 25, 180, 186
Saw Blades, carbide 50, 63, 71
Saw Blades, circular, 19
Saw Setting Machines, 182
Saw Sharpeners, 166 139
Saws, band, 39, 183, 189
Saws, cutoff, 4, 80, 81
Saws panel, 160
Saws, rip, Outside Back Cover
Saws, variety, 91
Screwdrivers, 21
Screws, 41, 109, 139
Shapers, 4, 13, 189
Shaper Steel 185
Spray Booths, 110
Spray Equipment, 110
Spray Guns, 110
Stapling Machines, 33, 78, 103
Steel Strapping, 28
Surfacers, Inside Back Cover, 13, 91, 205

Table Equipment, 106, 151
Table Slides, 106, 151
Tackers, Inside Front Cover, 33
Tack Rags, 124
Teenuts, 15
Tenoners, 86, 93, 139

Veneer, 152, 157, 158
Veneer Banding Press, 159
Veneer Clipper, 154
Veneer Lathe, 154
Veneer Patcher, 163
Veneer Tables 158

Wood Cement, 108
Wood Parts To Order, 159
Wood Preservatives, 6
Woodtape, 162

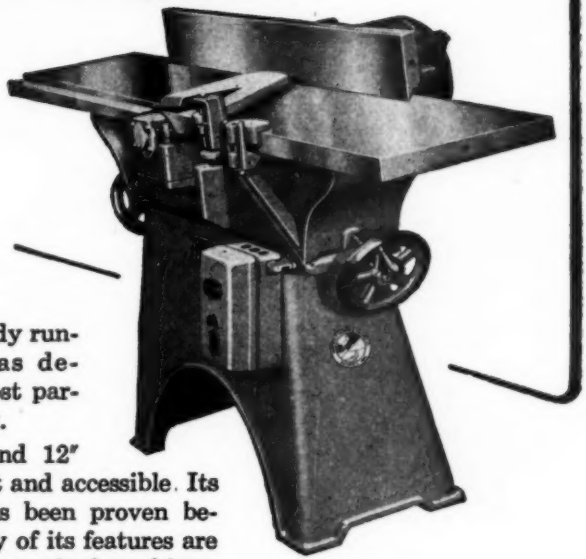
NORTHFIELD

EIGHT and TWELVE INCH

Medium Duty HAND JOINTER

FOR SMOOTH SUSTAINED OPERATION

FOR COMPACT ACCESSIBILITY



THIS SMOOTH, steady running machine was designed to do the most particular kind of work.

Built in the 8″ and 12″ width—it is compact and accessible. Its fine performance has been proven beyond question. Many of its features are available only in higher priced machines. You will like its speed, its precision, and its economical long life! Write today for complete information.

The NORTHFIELD Guarantee

We guarantee perfect satisfaction to anyone who may purchase our machines, and if any reasonable exceptions are taken to their good performance, they may be returned at our expense.

HIGH SPEED PRECISION

- Band Saws
- Surfacers
- Wood Shapers
- Jointers
- Saw Tables
- Mortisers (Chain & Hollow Chisel)
- Universal Woodworkers

Northfield FOUNDRY & MACHINE CO.

★ ★ ★ NORTHFIELD, MINNESOTA, U. S. A.

Index to Advertisers

A

AAA Saw & Tool Service & Supply Company 194
Adhesive Products Corporation 108
Adjustable Clamp Company 97
Aetna Plywood and Veneer Company 162
Aget-Detroit Co. 124
Aget Manufacturing Company 137
American Machinery & Motor Co., Inc. 199
American Machinery Exchange 195
American Pulverizer Company 104
Amos-Thompson Corporation 157
Arcata Redwood Company 18
Atkins Saw Division (Borg Warner Corporation) 19
Atlantic Lumber Company 74
Atlas Press Company 160

B

Bahnson Company 98
Bass, Rudolf 72
Beach Manufacturing Company 4
Behr-Manning Corporation 112-113
Bell Machine Company 24
Bickler Company, Edgar G. 198
Binks Manufacturing Company 110
Black & Decker Manufacturing Company 21
Black Bros. Company, Incorporated 7
Boice-Crane Company 194
Branyan & Peterson Co. 200
Burton Saw Company 186
Buss Machine Works ..... Inside Back Cover

C

California Redwood Association 18
Carboloy Company 61
Carborundum Company 125
Carter Products Company 70
Clamp Nail Company 187
Click, Mrs. A. Graham (Veneer Tables) 158
Clifton Machinery Company 191
Coe Manufacturing Company 154
Continental Screw Company 41
Cylinder Manufacturing Company 190

D

Davis Plywood Corp. 156
Detroit Edge Tool Company 167
Detro Manufacturing & Sales Company 124
Diehl Machine Works Inc., G.M. 164
Disston & Sons, Henry 173
Dodds Company, Alexander 182
Doig, Incorporated, Wm. S. 139
Dura-Crates, Inc. 192

E

Ekstrom, Carlson & Company 83
Ervin Machinery Co. 207

F

Fader & Company, A. L. 201
Fastener Corporation 33
Fay & Egan Company 183-193
Festo Wood Working Machinery Co. 181
Field Company, Wm. H. 128
Finwood Industries, Inc. 153
Flexo Products Incorporated 118
Foley Manufacturing Company 139
Food Machinery Company 30
Forest City Bit and Tool Company 170
Forrest Manufacturing Co., Inc., A.W. 71

G

Greenlee Brothers and Company 86
Greenlee Tool Company 12
Gustafson & Scott Mfg. Company 200

H

Hackett Company, J. Lee 197
Hanchett Manufacturing Company 95
Hancock Wood Products 194
Handy Manufacturing Company 59
Harrington, Incorporated, S. W. 190
Harris Machinery Company 195
Hartford Clamp Company 106
Hart Industrial Supply Company 194
Haskew & Company, R. K. 194
Hawker Manufacturing Company 3
Hill Brothers Veneer Company 152
Hoffmann, Frank J. 196
Hollow Tree Redwood Company 18

J

Jacksonville Blow Pipe Company 141
Jamestown Veneer and Plywood Corp. 144
Joa, Curt G. (Jenkins Machinery Co.) 175-195
Jones & Orth Cutter Head Company 35

K

Kenner L. R. 190
Kirk and Blum Manufacturing Co. 130
Klok Institute 195
Koppers Company, Inc. 29

L

Land, Incorporated, L. J. 195
Larson Plywood Company 159
Lodae & Shipley Company (Columbia Division) 142
Lundberg, David V. 193

M

Maas & Waldstein Company 119
Machlett Laboratories, Inc. 149
Mall Tool Company 122
Marcoloy Inc. 65
Marion Machine Company 96
Martin, Robert 196
Mason Furniture Corporation 191
Mattison Machine Works ..... Back Cover
McDonald Machinery Company 198
Mereen-Johnson Machine Company 80-81
Merit Products, Inc. 129
Midwest Abrasive Co. 123
Millbury Machine Company 139
Minnesota Mining & Manufacturing Co. 117
Moak Machine and Tool Company 189
Moline Paint Manufacturing Company 126
Monticello Novelty Company 194
Moore Dry Kiln Company 36
Mueller, Edward B. 192

N

National Air Sander, Inc. 121
National Casein 8-9
Newman Machine Company, Inc. 91-168
North American Products Corporation 63
Northern Hardwood Veneers, Inc. 158
Northfield Foundry & Machine Co. 205
Northwest Chair Company 196

O

Oakley Company 120
Ohio Blow Pipe Company 84
Oliver Machinery Co. 1
Onsrud Cutter Manufacturing Company 73

P

Pacific Lumber Company 18
Palmer Machine Company 200
Pearson Sanding Machine Company 116
Perkins Glue Company 26
Pick Manufacturing Company 192
Ply-Curves, Inc. 191

Porter-Cable Machine Co. 43
Porter Machinery Company, C. O. 22-23
Power & Company, L. 93
Powermatic Machine Co. 107
Powers Wire Products Company 78
Prentice Company, E. V. 163
Protection Products Manufacturing Co. 6

R

Radio Receptor Company
(Thermatron Division) 16-17
Riebling Company, Eric 192
Rockford Screw Products Company 139
Rockport Redwood Company 18
Rohm & Haas Company 11
Root Company, B. M. 201

S

Sand-Rite Manufacturing Company 126
Saranac Machine Company 103
Saw & Knife Specialty Company, Inc. 72
Schmidt & Company, Charles G. G. 185
Signode Steel Strapping Company 28
Simonds Saw & Steel Company 25
Skil Corporation 105
Smith Machine Company, H. B. 2
Sorenson Bentwood Corporation 176
Southern Screw Company 109
South-West Lumber Company 191
Spotnails, Inc. .....Inside Front Cover
Standard Dry Kiln Company 10
Starrett Company, L. S., The 180
Stem, Incorporated, Chester B. 191
Sutton Woodworking Machine Company 203
Swift Associates, Wesley K. 82

T

Tannewitz Works 70
Taylor Manufacturing Co., James L. 140
Thayer Company, W. W. 192
Thermatron Division
(Radio Receptor Company) 16-17
Thureson Lumber Company 192
Timesavers, Inc. 127
Topcraft, Inc. 195

U

Union Tool Corp. 102
United-Carr Fastener Corporation 15
U. S. Plywood Corp. 79
Upson Company 85
Used and Rebuilt Machinery 190

V

Victory Carbide Saw & Tool Company 50
Virginia Machine Tool Company 20

W

Walker-Turner Company Div.
(Kearney & Trecker Corp.) 39
Walter and Company, Inc., B. 106, 151
Wardwell Manufacturing Company 166
Warm Springs Redwood Company 18
Web Machinery Company.....191
Weldon Flinchbaugh and Company 159
Whitney and Son, Inc., Baxter D. 13
Williams Patent Crusher &
Pulverizer Company 67
Wisconsin Knife Works 14-208
Woods Machine Company, S. A. 27-48-49
Woodward Machinery Company 191
Woodworkers' Tool Works 115-193
Wysong & Miles Company 139

Y

Young & Bertke Company 135

Z

Zeiller & Nagel, Incorporated 182

"If it's for Woodworking . . . We Have It"

SPECIALS FOR FEBRUARY

Meak 12" BB/DMD Jointer
Powermatic Tenoner w/copes & cut-off saws BB/DMD
1 36" DeAll Band Saw w/motor mounted on rear of frame

BAND SAWS
36" Tannewitz 7½ hp. DMD
36" American Ball Br. Belt or M.D.
27" American Ball Br. Vee Dr.

PLANERS
Oliver No. 299-24" Sgl. B.B., DMD
Yates-American No. B-4 24" Sgl. B.B. DMD
Yates-American No. -8 24" Sgl. B.B. DMD
Whitney 24"x7" Dbl. P.B.
American No. 6½, 27"x7" P.B.

LATHES
Yates-American T-5 B.B. Auto. DMD
Mattison No. 55-C Auto.
24"x12" F & S Pattern Makers Lathe

TENONERS
American No. 5 Sgl. 2 cope C.O.
American No. 1 Sgl. 2 cope C.O.
Powermatic No. 2-A 3 mos. old
Smith No. 210 Cr. Double End

SANDERS
American 31" and 48" 3 dr. R.F.
Fay & Egan Comb. Disc & Spindle
Solem 3-drum 31" Endless Bed—Belt Drive
H.B. Smith. 3-Drum. 42" Endless Bed—Belt Drive

BORING MACHINES
Andrews 72" Double Col. 9 Spindle M.D.
Fay & Egan No. 312 - 36" - 4 spindle
Fay & Egan No. 1 Sgl Spindle
Andrews 42" Vert. 5 spindle

NAILING MACHINES
Doig 18 Tr. C.B. Cleater
Morgan 9 Tr. C.B. Nailer
Morgan 6 Tr. C.B. Nailer
Gramme 4 Tr. Cigar Box Nailer

MORTISERS
Greenlee No. 228 H.C. M.D.
New Britain No. 2 and No. 4 Chain

MOULDERS
American 4" and 6", No. 4, 4 side
American 6", No. 3, 4 side
Fay & Egan 12" - 4 side

CLAMPING MACHINERY
American 4'x8' Door Clamp
Hayes 4'x8' Power Door Clamp
Greenlee No. 602 Sash Clamp

RESAWS
Connell & Dengler 60" Band Resaw
Enterprise 30" Circular Resaw

BOX MACHINERY
Corrugater Fastener Mchy - Bohr-Kruse
Corrugater Fastener Mch. - Doig
Box Board Printer C. & D. M.C.
Box Board Matcher C. T. Mfg. Co.
Cut-off Saws, Beach No. 605 - Y.A.

ERVIN MACHINERY CO., INC.
124-26-28 Boulevard of Allies Pittsburgh, Pennsylvania

AN IMPORTANT

ANNOUNCEMENT

TO THE WOODWORKING TRADE

FROM WISCONSIN KNIFE WORKS

BELOIT, WISCONSIN

SHIMER EST. 1868

Samuel J. Shimer & Sons, Inc.

of Milton, Penna., have sold their Cutter Division to the Wisconsin Knife Works of Beloit, Wisconsin.

One of the oldest and best known names in the woodworking industry, Samuel J. Shimer & Sons was established in 1868. This firm specialized in the manufacture of woodworking cutters and cutterheads and pioneered many of the basic cutterhead and knife ideas in use today. Shimer was granted over ninety patents in the United States and various foreign countries.

While the circular bit type cutterhead has been the particular specialty of the Shimer Company, they have also manufactured a complete line of round heads, square heads, expansion matcher heads, shaper cutters, etc., for use on moulders, matchers, shapers, box machinery, planers, surfacers, tenoners, and other industrial woodworking machinery. Shimer produced over a quarter million cutterheads which were shipped throughout the world.

Shimer Circular Bit Type Expansion Matcher Head

Shimer customers will be pleased to learn that the Wisconsin Knife Works has one of the most modern plants in the country together with a staff of woodworking engineers skilled in the design and application of cutterheads and knives. There will, of course, be some delays during the period of completing the transfer. Everything possible under the circumstances will be done to give service during this period.

Now-two great names from a single source!

BADGER

SHIMER

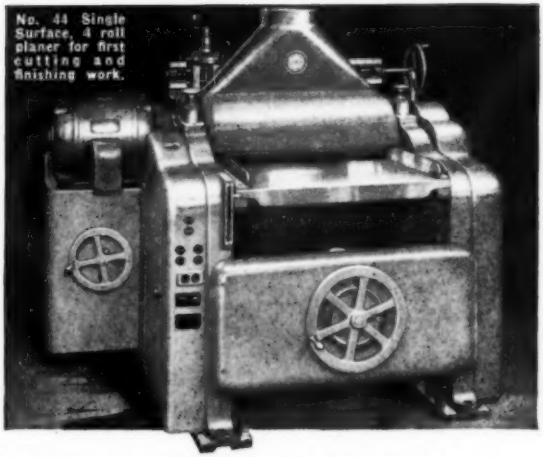
In the future, inquiries and orders for Shimer products should be sent direct to the Shimer Division of the Wisconsin Knife Works.

WISCONSIN KNIFE WORKS BELOIT, WISCONSIN

Engineers to the Woodworking Industry

Eliminate

THE THIEF IN YOUR PRODUCTION LINE



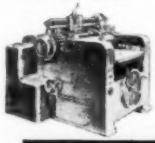
No. 44 Single Surface, 4 roll planer for first cutting and finishing work.

that old planer that seemingly plugs away so faithfully. Sure it keeps on running and does a fair job, but it soaks up many times the man and machine hours that a modern BUSS Cabinet Surfacer would require to do the same work better. And that means it is constantly robbing you of a good share of your profits.

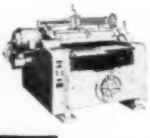
Consider for a moment that Modern Buss Surfacers provide finest finish planing at speeds as high as 80 f.p.m. . . . that most adjustments are made semi-automatically and instantaneously, in just a fraction of the time required on the older machines . . . also that the knives on these machines can be kept in perfect condition with relatively little time and effort. These are just a few of the many advantages that Buss Machine Works, through its many years of specializing in the building of planers EXCLUSIVELY, has been able to incorporate in their present surfacers.

THERE'S A BUSS PLANER TO EXACTLY SUIT YOUR NEEDS

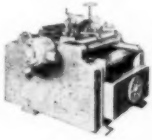
No. 4-L Single Surface, medium sized planer for first cutting and finishing work.



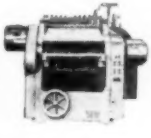
No. 66 Single Surface, 6 roll planer for first cutting and finishing work.



No. 88 Double Surface, 8 roll planer for first cutting and finishing work.



No. 55 Heavy duty Double Surfacer for planing rough lumber.



MICRO-SURFACER for planing hardboard and other very thin materials.

BUSS
SINCE 1862
MACHINE WORKS

Write for bulletins describing these machines in detail and you will readily understand why we say it is usually far cheaper to own them than to do without them.

PLANER SPECIALISTS EXCLUSIVELY

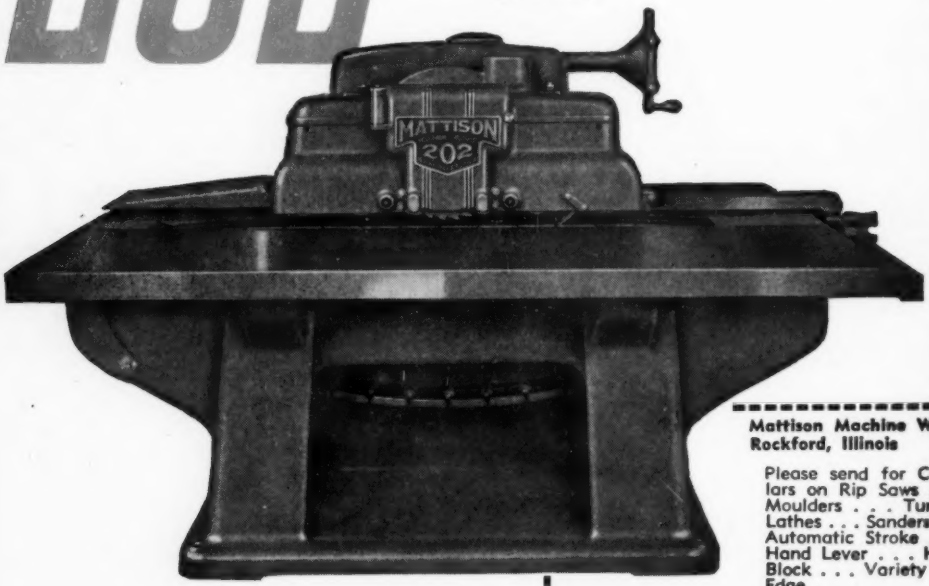
234 EIGHTH STREET • HOLLAND, MICHIGAN

202

MATTISON

FAST FEED
STRAIGHT LINE RIPPER

Here's why so many woodworkers standardize and recommend the 202.
Single chain construction.
You can rip sliver edgings which will not jam.
Smaller size saw blades can be used:
14" saw cuts 4" lumber
9" saw cuts 1" lumber
Hardened wear-resisting track and chain blocks.
Yielding Gauge saves lumber and assures faster edging and ripping.
Patented saw jointing and side dressing device.
Provides straight-edge accuracy for glue joint work.



Mattison Machine Works
Rockford, Illinois

Please send for Circulars on Rip Saws . . . Moulders . . . Turning Lathes . . . Sanders . . . Automatic Stroke . . . Hand Lever . . . Hand Block . . . Variety . . . Edge . . .

Name..... Title.....
Firm .....
Street .....
City ..... Zone..... State.....

MATTISON MACHINE WORKS
ROCKFORD · ILLINOIS